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THE JOURNAL OF HIGHER EDUCATION is published to serve as the professional journal of the sixty-seven thousand instructors and administrative officers in the colleges, universities, and professional schools of the United States. The editors plan to bring to their constituency reports of the most significant investigations in the instructional, administrative, personnel, and curricular problems in all branches of higher education. The list of associate editors includes representatives from every department of academic responsibility in higher education, and these, co-operating with the editor, will attempt ten times a year to report upon the progress of higher education.

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The Journal of Higher Education MARCH, 1930 II

An Experiment in Teaching

By H. H. WHETZEL

An Outline of a Remarkable Plan for Stimulating the Student's Initiative

PERHAPS no teachers in this country give less consideration to or take less stock in pedagogical theory and practice than do college professors. Few teachers in college or university, in the biological sciences at least, have ever had special training in the theory and practice of teaching. Whether this is necessary or even desirable I am not saying. It is my opinion, however, that much of the criticism now leveled at the college student because of his disinterest in his scholastic work ought rather to be directed against the professors who teach him. My own experience as a student and as a university professor, for now some thirty years, satisfies me that the average professor teaching college students has little "method in his madness." I myself do not pose as an expert in pedagogy, nor would I claim complete immunity from the above indictments. I only marvel that we scientists practice so little science in our teaching.

The procedure in presenting laboratory courses in biological subjects today is, with rare exceptions, that introduced half a century ago: one or more laboratory exercises per week in which all of the students study the same subject and the same material under the solicitous guidance of immature instructors, a lecture or two by the professor, a mass recitation conducted by one of these same instructors or, rarely, by the professor himself, and a voluminous weekly report which is usually only a slovenly and inaccurate misalliance of poorly digested laboratory pickings. In addition, the student frequently has to hand in, for correction (*sic*) by the overburdened instructors, notes he has taken during the professor's lecture. This is rarely complimentary to the professor, of no interest to the instructor, and of questionable value to the student. This, in brief, is the system in vogue, at least in most American colleges and universities.

During the first twenty years of my career as a teacher in Cornell University, I followed this general system with a degree of faith and devotion

which I can now contemplate only with a feeling of astonishment and chagrin. During the second decade of this period, I began to be aware of a feeling that something was wrong with my teaching methods. In spite of the fact that, so far as I could learn, the courses which I gave were looked upon with a reasonable degree of pleasure and approval by my students, I still felt that there must be a better way. I sought in vain, among my colleagues and the literature on the subject, for a procedure which seemed to offer a direct solution for my difficulty. Ideas gained from articles I read on the Dalton system and other experiments, then being initiated in secondary schools, set me thinking. The resolution grew to attack my teaching problem in the same way that I was accustomed to attack my research problems. I decided to experiment. Having won the approval of my instructing staff, I spent an entire summer in working out a new and untried procedure. We gave it a trial for the first time during the fall semester. This experiment has now been going on for about ten years, and there is every indication that it will continue an experiment to the end of my teaching days, for each year problems in the details of the method present themselves, and each year we attempt by the experimental method to perfect our procedure.

ONE course in which this method is used, expressed in terms of our curriculum, is a three-hour elementary course in plant pathology, of one lecture a week and of nominally two laboratory periods of two and a half hours each. The course in the fall term is limited to fifty undergraduate students. If more register for it, that fifty having the highest average standing in all of their preceding work in the institution are admitted. The remainder are rejected. In the spring term the number is limited to twenty-five on the same basis. Students who because of their low standing have been rejected in the autumn usually get the course in the spring term, when applications are relatively few. The course is open to Sophomores, Juniors, and Seniors throughout the University. The only prerequisite is the regular six-hour course in beginning botany. The teaching staff in this course normally consists of myself, an assistant professor, an instructor, and a laboratory assistant with an assistant in charge of what is known as the "materials room."

When the students arrive for the first exercise, they are given some mimeographed information sheets in which the manner of conducting the course is briefly set forth. The salient points in the procedure are emphasized at this meeting. The students are then referred to the fifty-eight exercises in the information sheets, only three of which are prescribed for all students. The remaining exercises, each dealing with a specific disease of certain plants, are arranged in twelve groups. From each of these groups the student selects one for study, thus making a total minimum of fifteen exercises to be done during the term. Each student is allowed to select five or more additional diseases which he may study if time and inclination permit. The average number of exercises completed by each student during the term is seventeen.

Having made his selection of exercises with the advice and approval of one of the professors, the student is now ready to begin work at once. He goes to the materials room, adjoining the laboratory, where the necessary mimeographed text on the subject, preserved specimens, cultures, slides, photographs, and other materials are checked out to him. Each student is allowed to have out, at any time, materials for the study of three different diseases, and he may with permission of the professor in charge check out more than this under certain conditions. He purchases at the bookstore our *Laboratory Outlines* in which he finds directions for study of the laboratory materials, and supplies himself with some plain sheets of drawing paper and drawing pencils. He goes to the department stockroom, where he obtains a complete equipment of laboratory tools and gets his assignment to a locker. The microscope which he is to use bears the same number as his locker and is kept in the laboratory. The specimens and materials which he has checked out from the materials room are handed to him in a shallow tray which slips into his locker. The locker will hold from three to five such trays of material. He is assigned to a table in the laboratory which is his on two specified laboratory periods during the week, though he is free to use it or any unoccupied table in the laboratory at any time throughout the week, day, or night. A laboratory which opens its doors to students at nine and closes against him at four is an abomination.

THE students are now told that they are at full liberty to come and go from the laboratory work as they choose. They are informed that during the so-called "laboratory periods" from 1:40 to 4:00 o'clock on three afternoons of the week and from 10:30 to 1:00 on Saturday morning, there will be an instructor in attendance to answer questions and give them such assistance as they may request. The instructor is not permitted to offer advice or assistance to any student unless requested to do so. Outside of these periods students may not ask the instructor for assistance. They are quite free, however, to call on the professors for help at any time.

When the student has completed to his own satisfaction the work on any given exercise, he applies for a conference test on the subject. This may be taken only during the laboratory period. As soon as he has thus prepared himself for the conference, he writes his name and the name of the exercise on a small slip of paper and drops it into a slotted box at the materials room. This may be done at any time during the week. He may also designate on the slip the particular laboratory period during which he desires the conference. The slips are taken from the box at the beginning of each laboratory period by the assistant in the materials room, who then displays them chronologically in a special holder so placed that the student can see his position with respect to the others, in the order of call.

Promptly at the beginning of the period, the assistant professor and I appear at the materials room. One of us takes the slip of the first student on the list, the other the next, and each student is called to a personal conference in another room. We have

tried holding the conference with two or more students ready at the same time on the same exercise, but it does not work. Individual conferences are now the rule. We have in the conference room the necessary blackboard and other facilities for the work.

When the student comes to his first conference, the procedure involved is explained to him. He is told that we assume that he has accumulated a sufficient body of facts and information to enable him to solve a series of problems which will be set for him on the subject. It is pointed out to him that if he does not have the facts necessary for the solution of the problem he, of course, cannot solve it, but it is also emphasized that he may have all of the facts and yet be unable to do the mental operations necessary in manipulating these facts for the solution of the problem. In short, solving problems by the use of facts constitutes the test of his accomplishment.

THE professor then proceeds to set problem after problem, some of them simple and some of them complex, and the student, standing on his feet without other students to embarrass him or to give him moral or material support, must by word of mouth indicate to the professor the mental operations through which he proceeds in his attempt to solve the problem and to arrive at a logical answer or conclusion. When in his hesitation or stumbling, the professor sees that the student is having difficulties, an attempt is made by asking specific questions to discover whether it is the lack of knowledge of certain facts or inability to use the facts he already has that is giving him pause in his attack upon the problem. If the professor discovers that the student is wanting in knowledge of one or more essential facts for the solution of the problem, one of two courses may be adopted: the professor may give the student the facts and then ask him to proceed with the solution of the problem, or he may decide that the paucity of factual knowledge is such that "gifts" are not warranted, and he dismisses the problem with an explanation to the student of the unhappy situation in the case. He then proceeds to another problem in the hope that here the student will have the essential factual data. The particular facts that the student knows or does not know appear to me to be unessential, but it is important that he have sufficient information so distributed over the subject as to enable him to solve pertinent problems.

The conference may continue for a half-hour or an hour and a half depending upon: the number of students who are waiting for conferences, the evident need of the student for mental exercise, or for any one of a number of other reasons which will occur to any good teacher. A few well-selected problems will be sufficient to give any competent instructor, within the course of fifteen to twenty minutes, a just estimate of the student's accomplishment in the subject at hand. Thus the least important purpose of the conference, perhaps though a necessary one under our antiquated system of educational administration, that of determining what grade the student should have, is quickly accomplished. The remainder of the time available for the conference can then be used for the more

important purpose of teaching the student how to think with facts which he has accumulated and to give him exercise in this all-important feature of the process of education.

When the professor has completed his questioning, the student is urged to present any questions which he may have. These questions are answered, where possible, by the Socratic method, thus compelling the student to answer his own questions. Such time as may still be available is often profitably devoted to giving the student new or interesting information which has not otherwise come to his attention in his study of the materials or his reading, and thus his knowledge and interest in the subject may be broadened and deepened.

At the conclusion of the conference, the student is asked whether he is prepared to accept a mark on his performance for that exercise. If he accepts a mark, the professor enters it in the records where it is available to the student at any time after the conference. The student, on the other hand, may prefer not to take a mark at that time but to go back and study the disease further, applying for a conference at some later time. The only provision required is that he must take the reconference with the same professor. A note to this effect is made by the professor on the student's card, which is returned to the materials-room assistant, who files it to await a time when the student shall again sign up for a conference on this topic. The student may elect to reconference on any given exercise as often as he chooses, with the distinct understanding that his grade will be based on the final performance, when he decides to take the credit. His performance in previous conferences has no bearing whatever on the grade which he finally accepts. Having once declared his readiness to accept his grade, however, he cannot claim a reconference on that particular subject.

A student finding his name well down the list for conferences need not waste his time waiting for his turn. He may proceed with the study of the next disease of which he has material checked out, until he is called. If the number up for conference on a given afternoon is greater than can be handled during that period, those near the end of the list have to wait for a conference until a later period, but their names will appear at the head of the list at the next period on which they expect to be in the laboratory.

THE attendance at the one lecture in the week is likewise not compulsory. The student may come or remain away just as he chooses without any detriment to his standing in the course, as far as the mere matter of attendance or absence is concerned. Not only is he told that he may remain away from the lecture if he chooses, but provision is made so that he will not be seriously handicapped by such absence. A complete, mimeographed text of the lectures is given to each student at the beginning of the course. In this are presented the organization of the subject and the important generalizations with ample illustrative cases and with a well-selected bibliography of references bearing on each subject so that the student will be able quite independently of the lecturer to get all the essential facts.

The lecture which comes once a week is not given, as is usual, for the purpose of conveying facts, theories, opinions, and conclusions of importance to the student. Those he will find in the lecture text. The students are told this at the first lecture with the remark that, if they wish to know the purpose of the lectures, they may find out by coming to them. The real object of lecturing, as I see it, should be to stimulate and inspire the student to a real interest in the subject; to give "set," as the educational psychologists say; and to vivify and adorn important subjects and generalizations. The student should leave a lecture with a new eagerness to examine his laboratory materials and with a renewed desire to explore further into the writings of those who have contributed to the subject. A professor who is not an interesting and stimulating speaker should never lecture either to college students or to anybody else. I never criticize a student for sleeping in one of my lectures. If I cannot keep him awake, he is entitled to all the sleep he can get. It is made clear to the students that no lecture attendance is kept, that they are quite free to come to none or only part of the lectures if they choose, or even to only a part of any one lecture. Coming late to a lecture or going out before it is completed is not a crime. Such incidents are of concern only to the students themselves.

There are examinations in this course. One must defer to tradition and custom to some extent. Three unannounced "prelims" are offered during the term. The student may elect to take these or not as he chooses, but if he takes one he commits himself to the other two. There is a final examination, required of all students through the beneficent action of our faculty. I sympathize with my students, but hold them to it. The final term mark is made up as follows: fifty per cent of it is based upon the average grade obtained in the conferences; if the student has taken the "prelims" the average of these counts twenty-five per cent of the term grade, and the final examination twenty-five per cent; if the student elects not to take the "prelims," then the final examination counts fifty per cent.

THE philosophy which I think underlies this procedure is the next consideration. In the first place, every possible responsibility for the work in the course is placed upon the student and is not assumed by the professor, as is usually the case. The student is made to understand clearly that his attendance at lectures and laboratory periods is wholly a matter for his own decision. The professor requires nothing with respect to attendance, nor does he concern himself with it. He assumes that every student taking the course is quite competent to adjust his attendance to his own best advantage. Failure to do so brings with it certain consequences for which the student alone accepts responsibility.

Some may wonder whether this procedure operates as effectively with students who are required to take the course, as with those who elect it. Approximately half of the students taking the work in the fall term are required to take it by the Department of Forestry. The Department of Plant Pathology requires no student

to take any of its courses, nor does the faculty of the college make any such requirement. Our experience has been that, while the forestry students often approach it with the well-known attitude of the forced laborer, they quickly succumb to the novelty of personal responsibility involved, and we are soon unable to detect any marked difference between their attitude and that of those who have elected to take the course.

The question, does the student devote the necessary time to the work in the course, may also be raised. Inquiries carefully checked have proved that the average student spends nearly twice as much time per week under this system, as he did under the old one. This results, perhaps, from the unaccustomed feeling of responsibility which is suddenly thrust upon him. He is not held either directly or by implication to set hours for work nor does any one suggest just how much time he should devote to the work. He has contracted to do a minimum number of exercises; some of them rather short and easy, others long and complicated. He soon learns from his conferences that it is not time spent with the subject, but knowledge acquired and usable that is requisite to a creditable performance in the conference or examination. He is compelled to decide for himself how much time he will or can afford to spend on this particular course in relation to the other courses which he takes. The natural result is that he puts in the time required in the other courses, or as little of it as he can get away with, and devotes the rest of his study hours to the course in plant pathology. Students often remark to me that the course takes a lot of time and that, if all the courses in the university were taught in this manner, one could not carry many subjects at any one time. Quite right, but no student ought to expect to carry more than three or four subjects satisfactorily. Under the old system we dragged the students through twenty exercises of the same kind as those of which he now contracts to do but fifteen for the same credit. It is not that the course takes more time, he gives it more. I remind the student that his natural ability, his inclination, his interest, and the press of other duties determine the time he spends on the work, pointing out to him that neither by direction nor by implication do I make any demand of his time. Here again he is compelled to exercise judgment and accept responsibility.

The reader will recall that each student makes his own selection of the number of exercises which he is to study. To be sure this selection is to a slight extent limited by the grouping of the subjects from which he must choose, but where in this world are not our free choices of action more or less limited. This freedom to choose what he will study, limited as it may be, has a happy effect upon the attitude of the average student in approaching the work in the course. He feels that he is studying something that he has chosen to study. It is a mistaken notion, at least in biological work, that the use of one particular species of plant or animal or disease or whatever, is essential for the demonstration of any principle, theory, or general conclusion.

The requirement, that the instructor in charge of the laboratory will

answer questions and give assistance to students only when requested, will doubtless cause headshaking on the part of some. The universal practice of well-intentioned or meddlesome instructors butting into the student's cogitations with remarks on errors in drawings or other features of his laboratory activities does far more harm than any possible good which may accrue therefrom. When the student asks for assistance or information, he is in the most receptive mood to receive what the instructor may have to offer. Many students need or require little assistance in their laboratory work, but, whether they need it or not, it should never be obnoxious. The student should seek enlightenment, it should not be thrust upon him.

THE conference feature of the course will doubtless arouse some questions and doubts. Does it not require a great deal more time to handle a group of fifty students in this manner than in the old-fashioned way, some one will ask. Emphatically, no. Careful checking on this feature under the new procedure as against that under the old, showed that the conference system actually reduces the amount of time spent by the instructing staff. The actual time devoted to teaching by myself and the assisting professor is twelve hours a week for each of us during the fall term and six in the spring, not counting the lectures and preparatory study. There is no great stack of notebooks to be laboriously corrected, at least once a week, far into the small hours of the night, either by professors, instructors, or assistants, and what is more important no need to make the customary pretense at doing so. The student brings to his conference his drawings and such notes as he may choose to make. The drawings are spread out on the table before the professor. He may quickly gather from this display before him the character and accuracy of the understanding which the student has of the things he has been studying. These provide the teacher with a basis for many of the problems which he will set for solution, and they are presented at just that time when their presentation is most useful to both teacher and student.

The time required for the preparation of fresh material of which much is used in this course is somewhat greater under the present procedure than it was under the old. Since all the students who have selected a given disease will not be working on it at the same time, fresh material for each must be prepared in somewhat larger quantity and must be available over a considerably longer period of time. Furthermore, the practice of permitting each student to select his own list of diseases to be studied increases considerably the number for which fresh material must be prepared and kept on hand. Since the students are thus enabled to work at their own speed and on the particular disease in which they are interested, the advantages far outweigh in value any saving of assistants' or instructors' time.

In fact our present procedure requires much less actual time of the assisting staff than does the ordinary laboratory procedure. There are no materials to be put out before the laboratory by a harassed assistant, rushing back from a hasty lunch. There is no gathering of scattered and

wrecked specimens littering the laboratory after the students leave. Each student is responsible for the material he has checked out. He gets it out himself; he puts it away; and, when at the end of his conferences he returns the material to the materials room, it is carefully checked and any losses or injury to slides, specimens, or other permanent material is charged to his breakage; and he pays for it. It is a grand and glorious feeling at the end of a strenuous laboratory period for the weary instructor to gaze upon the laboratory tables free of littered specimens and debris and ready without any effort on his part for the next period. The time thus saved to assistants and instructors in setting up and clearing away laboratory materials is more than ample to compensate for the additional work which they must do in preparing fresh materials.

AN important feature of the conference, as we handle it, is that of leaving to the student to decide when he wishes to take his mark. He is thus compelled to judge his own performance and to request the appraisal of the professor as to the worth of his accomplishment. Being permitted a reconference as often as he chooses before accepting the mark, leaves him little ground for resentment regarding the mark which he finally receives. I am reminded of one student who, having made a rather poor exhibition, was asked if he was ready to take a mark. "That was pretty rotten, wasn't it, Professor?" he said. "Well, it might have been better," I replied, "but it is entirely up to you whether you take a grade or study the exercise some more and come back for another conference, you know." "Yes," he said, "but I am so far behind with my work now that I don't think I can afford to take the time to study this further. Guess I'll take my mark." "All right," I replied and went to the materials room to enter up the mark. He put away his materials and called out as he passed me, "Would you mind telling me what grade I got?" "D," I said, "is the best I can do for you on that." "Just about what I thought I'd get," he said in a disgruntled tone. "My judgment was good, wasn't it?" I replied. A smile replaced the scowl as he replied, "It certainly was."

In all of our contracts with students whether in the laboratory or conference room we treat them as gentlemen and ladies. The student is never scolded for poor work. If he is satisfied to do that kind of work and accept the consequent grade, that is his business. I have long ago divested myself of the feeling that poor work on the part of the student is any reflection on me, in spite of the fact that I may sometimes, of course, be responsible. I refuse to harbor any feeling that the student is doing the work for my benefit or glorification. On the other hand, I frequently ask the student after an exhibition of poor accomplishment, if he would not be interested in knowing what I think is his difficulty. If he replies in the affirmative, I attempt in a kindly manner to explain to him where his difficulty lies, even to the extent of telling him that I think he is lazy. I have not yet brought myself to the point of telling a student that I think he is dumb, even though I may be quite sure that that is his malady. On the

other hand, I never lose an opportunity to give a student a good word for an especially excellent performance. Praise is far more effective in stimulating a student than is harsh criticism.

THE common practice of requiring the student to accumulate facts which he is to disgorge on demand is, I think, one of the chief indictments of our college and university educational procedure. Bare facts are of themselves of no intrinsic value; they have worth only as they afford materials for thought. It seems to me, therefore, that our constant aim should be not only to teach the student how most quickly and effectively to accumulate facts but, what is more important, how to use these facts in thinking, that is, in solving problems, deriving conclusions, or, in other words, making judgments. Too much emphasis in college is put on getting the facts but almost none on using them. To expect students to be zealous in the gathering of facts to be parroted back to the professor is absurdly naive. To take it for granted that students will effectively use the facts which they have accumulated without exercise in so doing, exposes a childish faith in humanity quite inexcusable in a college professor. Yet, nowhere in our usual teaching procedure is any provision made for giving the student exercise in the manipulation of the facts which he has learned.

This feature of our method seems to us to be its greatest appeal for approval, and this is borne out by the actual results, as we watch the increasing facility with which the students meet the problems which are presented for their consideration week after week. It is also proved by the growing eagerness and pleasure of the student, as he comes in succeeding weeks at the call for his conferences. At the first conference, hesitation and dread of the approaching ordeal usually show clearly on his face, but when he finds that the conference is only an opportunity for him to pit his wits against problems to be set for solution by a friendly professor, he comes to look upon the impending contest with the same joy of battle that inspires the football player, or any other participant in a similar contest.

One marked advantage of this procedure is that each student can now work at his own speed and convenience. It is well known of course, that no two students will cover the same ground in the same time. Some will wish to do only the essential minimum, others will want to explore various enticing side issues and matters of special importance to them. One does not usually study and learn to best advantage when he is constantly under the pressure of time. The opportunity to suit his working hours to his convenience is also, I think, an important matter for the student.

By this procedure I now have all of my time for teaching. Much time and energy have been spent in working out the details of what I call the "machinery" of the course, in setting up the laboratory materials, that is, in preparing sets of specimens, photographs, and so forth, so that every student may have at his disposal the full quota of materials for each exercise. Careful thought has been given to the details of laboratory routine, so that no student will have to wait idly for

the checking out of specimens at the window or in getting his conferences. Since little hitches in matters of this kind will demoralize and nullify the teaching program, time devoted to their solution is time well spent. Assistants and instructors, trained and efficient in the routine of preparing satisfactory and effective materials, are an absolute requisite to this plan.

Another result is that I am always in a good humor when I come to my classes. There is nothing the student has done, or can do, to rouse my ire. There are no rules or regulations which I have made that the student can break and so irritate me. The student comes in the same frame of mind. He is not compelled to abide by any attendance regulations, nor must he accept my judgment of his work except at his own expressed desire. Thus we both approach the hour with the feelings of two friends who sit down together to pit their wits in pleasant and profitable contest. And finally, what is most important of all, the student has, at least, fifteen adequate opportunities during the term to exercise his mind with facts in the all important educational process of solving problems, arriving at conclusions, and making judgments on things in which he is presumably interested.

Academic Freedom

By L. L. THURSTONE

A Practical Plan to Achieve the Right of Unhampered Thinking and Research for the Teacher

THE purpose of this paper is to describe a plan whereby the teaching profession may defend itself more effectively than in the past against encroachment on academic freedom. Specifically, the plan is intended to meet the situation when college teachers are dismissed because their teaching or research conflicts with religious superstition and prejudice against methods of arriving at factual truth. The author has tried to keep in mind that militant aggression will not be tolerated by the teaching profession and that college teachers as a rule do not care to invite an open break between themselves and the trustees of their colleges. The plan will be described, and a number of its implications and probable results will be enumerated.

The plan is briefly as follows: The Association of University Professors should be asked to prepare and maintain an active list of accredited colleges and universities. Included in this list should be all the institutions of collegiate rank whose academic standards are acceptable to the Association. The definition of these academic standards should include professional competence of the staff, collegiate level of instruction, and, lastly, freedom of scholarly and scientific inquiry. If at any time the Association through its investigating committee decides that an accredited college no longer satisfies the conditions of eligibility for the Association in any one of the three requirements listed previously, the college should be eliminated from the accredited list.

Membership of teachers in the Association should be limited to those who, at the time of application, are teaching in an institution on the accredited list of colleges maintained by the Association. If a member of the Association accepts a position in an institution which is not on the accredited list at the time of acceptance, he should automatically forfeit his membership in the Association. If, later, he returns to an accredited institution, he should be eligible for reinstatement without paying dues for the interval spent at the unaccredited college. This regulation should not apply to members who accept positions in non-teaching institutions. Such members are eligible for transfer to associate membership. Those who are teaching in a college at the time when it is removed from the eligible list would not be affected as regards membership in the Association. They would retain their qualifications for membership as stated above.

The various scholarly and scientific societies represented by the college

faculties should be invited to adopt similar rules governing membership with such adaptations as may be necessary. The members of these societies hold positions in research laboratories or they are engaged in the practice of their profession. Such members who are not teaching would not be affected by these rules. It is highly desirable that these various societies specify the same list of accredited colleges in order to have uniformity, although each of the societies might choose to maintain its own list of accredited institutions.

Membership of teachers in each society should be contingent on the status of their college. Thus, if a teacher accepts a position in a college which is not on the accredited list at the time of acceptance, he would forfeit membership in his scientific or professional society, and he would also forfeit eligibility for membership in the Association of University Professors. But if he holds a position in a college at the time when that college is removed from the accredited list, his membership should not be affected in either society.

If a college has been removed from the accredited list, it should not be reinstated until the cause for removal has been corrected. Specifically, if a college has been removed from the accredited list because of the dismissal of a teacher, the college should not be eligible for reinstatement until the teacher has been offered full reinstatement into the position which he left and a payment of his salary from the date of dismissal until the date of payment. This requirement should be independent of any income that he has earned in other positions in the meantime. It might be regarded as a compensation for the uncertainty, inconvenience, and humiliation which he has suffered because of the dismissal. A maximum penalty on the college could be fixed at payment of full salary for a period of five years. If any students were dismissed for the same cause, they should also be offered full reinstatement before the college is eligible for the accredited list.

IT is obvious that a direct frontal attack on the legal status of a board of trustees would be of little or no avail because undoubtedly the legal control of the university lies securely in its hands. Nor can the trustees be expected to hand over to the faculty the right to veto decisions of the board. The present plan avoids these difficulties in that the trustees are acknowledged to have final authority over the college. Our plan makes it voluntary with a board of trustees whether the college shall or shall not conform to the standards of academic freedom as defined by the Association of University Professors. If the college wants to enjoy the advantages of a competent teaching staff and the advantage of a good reputation in the academic world, it must voluntarily pay the price of academic freedom. No force is involved.

In the past we have relied on the moral effect of the reports of the Association of University Professors. These reports are frankly limited to fact-finding in the hope that the publication of facts will gradually have some effect in changing the policies of the colleges. It is a notorious fact, however, that seldom, if ever, is the dismissed teacher reinstated. It is a

matter of general observation that the reports of the Association of University Professors have no teeth. Frequently the moral effect is insignificant, especially in those situations where the trustees defy the professors and simply ignore the report. The plan that we have outlined here automatically throws the problem back at the trustees who must decide whether or not they shall pay the price of academic freedom for the advantages that they naturally seek. They want eminent scholars and competent teachers on their staffs, and they want academic recognition for their university. They themselves should decide whether to grant freedom in payment for these advantages, which are largely within the control of the scholarly and scientific societies.

The publication of a report of the Association of University Professors which is adverse to a university on account of the dismissal of a faculty member frequently receives considerable newspaper publicity. The effect of this publicity is usually short-lived because the public as well as the college forgets it, and hence the injury is seldom corrected. Under the present plan the university which is removed from the accredited list remains under the handicap of a self-imposed isolation which is not so easily ignored. In fact, it becomes necessary for the college to correct the individual injury before reinstatement of the college to the accredited list can be considered. It is evident that boards of trustees will think twice before dismissing faculty men for unpopular ideas. It is to be hoped that in such situations the trustees will henceforth decide to bargain with their superstitious clientele rather than to offend against academic freedom.

IN formulating the present plan the author has in mind the conservative temperament of the academic profession. The Association does not care to be referred to as a professors' union if such an appellation can be avoided. The present plan involves no violence in speech or action, and it does not challenge the legal right of the trustees of a university to decide matters of public policy. It wholly avoids those militant features which are distasteful to college teachers. Nevertheless, the effects on the colleges may be sufficient to prevent continued interference with academic freedom.

There are of course various ways in which the teaching profession might retaliate against the colleges for interfering with academic freedom. For example, student credentials from the offending institutions might be discredited, but such action would be decidedly unfair to the students. By officially placing the penalty on ourselves, we shall avoid much of the criticism that would otherwise be leveled against us. It should also be noted that it is entirely voluntary with a teacher whether he shall accept a position in a discredited institution. He has the right to accept such a position by forfeiting membership in the national society of his profession. This is, however, a price which most competent college teachers are not willing to pay, and consequently the best teaching talent will be more or less discouraged from accepting positions in discredited colleges.

When a college dismisses a teacher because of his unpopular ideas, the

only penalty that we inflict officially is upon ourselves. We acknowledge that the trustees of a university have the right to specify what shall be taught or investigated in their institution. We merely say that if the trustees of any university impose restrictions on academic work that are not to our liking, then the profession withdraws membership in the scholarly and scientific societies from among us who accept positions in such an institution. The college which is thus removed from the accredited list has the privilege to proceed, entirely unmolested by us. It can continue with any restrictions or superstitions it pleases to endorse, but it cannot command the services of scholars and scientists unless these men are willing to give up membership in their respective societies. Perhaps some men will accept teaching positions under such conditions, but it is probable that an institution which is stricken from the accredited list will have some difficulty in filling the ranks of its faculty. In less than ten years the trustees of such an institution may again face the choice of either pleasing their own superstitious clientele or else accepting the requirements of the academic and scientific world. The choice is entirely in their own hands. It is quite likely that the difficulties of a college in obtaining competent teachers under these restrictions will be so considerable that a local upheaval in the administration will bring about a radical change.

Another very decided advantage with the plan that has here been proposed is that if the trustees of a college dismiss a teacher for unpopular instruction or research, it is the national association of professors that investigates the college and removes it from the accredited list. In this manner the faculty of the college concerned need not be personally involved in any dispute with their trustees.

IN dealing with this problem we must face the fundamental difference between the mores of the society that supports a university and the ideals and objectives of the scientist. Perhaps a brief perspective of this relation is in order here. The scientist investigates as objectively as possible the phenomena in his field of special interest, and if his inquiries trespass on the mores of the society that supports him, he is in trouble. He has sinned and is regarded as an immoral influence on the young innocents whom he should be guiding into the ways of righteousness. Here logic does not count. If the public abhor evolution as sinful, we shall only make matters worse by starting an argument with them.

The history of science is repeating itself. The honest inquiries of Galileo about the physical aspects of the universe trespassed on the taboos of his time, so Pope Urban declared that "it is a question of the most godless business which could ever be discussed—that the doctrine was in the highest degree sinful." Charles I in France forbade the possession of furnaces and apparatus necessary for chemical processes, and Henry IV did the same in England. A Birmingham mob and an Anglican clergyman wrecked the home of Priestley, destroyed his library and instruments, and drove him into exile. The teachings of Linneus about the sexual system in plants were for many years prohibited in the

papal states and elsewhere in Europe. But in 1773 permission was given that they be discussed in Rome! The same taboos are still with us, but they now cover fewer biological and social phenomena.

The present day conflict between science and superstition is seen in the legislative attempts against evolution and vivisection. The social scientist who inquires about the sex code on which we have built our system of morality finds that he also violates popular taboos. The economist who investigates or lectures about unpopular economic theory or about socialism may find himself in trouble with the trustees and with the "one-hundred percenters" in society. The historian who aims to discover the truth about our historical heroes may find that the public does not want to have its idols shattered. The scholar who ventures into biological and social phenomena is likely to have trouble with superstition and prejudice.

The plan here proposed has been drafted to meet, as far as possible, the various limitations that are natural to the problem. The author does not insist that these particular details be adopted, for there may be other effective solutions. But it seems urgent that some definite action be taken by the teaching profession which shall promise to minimize interference with objective inquiry about biological and social phenomena. It is our plan to withdraw the advantages of academic talent from those institutions that fail to support science with the freedom on which it lives. It is to be hoped that only one or two colleges will need to be placed in academic isolation when the governing boards of our colleges find it to their advantage to adopt a policy more respectful to the academic profession.

Economic Effects of Education

By HAROLD F. CLARK

"We cannot maintain our economic advantage or hope fully to realize on our economic future unless we consciously accept the principle of equilibrium and apply it skillfully in every economic relation."

Report of President Hoover's Committee on Recent Economic Change

THE old economic arguments for higher education are no longer adequate; better reasons should be advanced if education is planned in terms of the economic needs of society. Automatic machinery and modern engineering are constantly changing the occupational distribution of the world. Higher education must be a factor in the constant replanning of society in the light of these changes if it is to increase economic welfare.

What are the economic effects of higher education? The answer to this question is largely in the realm of opinion at the present time. This article is an attempt to remove part of the answer from the field of opinion to the field of fact. Before we begin the argument, it may be well to say that we are perfectly willing to admit that there may be more important reasons for supporting higher education than economic ones alone. But since it is impossible to consider everything at one time, in this paper only economic factors will be discussed. The conclusion of this article will disagree with many of the commonly accepted economic arguments for higher education. Anyone who will follow the discussion to the end will discover, I hope, better economic reasons for higher education than those commonly accepted, provided certain changes are made in the higher education.

What is the current opinion regarding the economic effects of education on the individual? I quote from a recent editorial:

> It is estimated that a college education is worth $72,000 in the average instance. Counting $6,000 as a correct estimate of what is necessary for one to get through college, it is evident that there is a profit of 1,200 per cent to the student who carries his college studies through to the end. If one deducts the cost of education itself, it is easy to see that the college student adds to his future income at approximately the rate of $15,000 a year during the four years he is in college.

You have read many such statements. Our professional organizations, as well as those devoted to research and to propaganda, have scattered such opinions far and wide. As a further illustration of such statements the summary in Figure 1 is presented. This is a combination of the data given by Dean Lord in a pamphlet entitled *The Relation of Education and Income* in which he presents the earnings of a large number of men who have had different

amounts of education.[1] The study is a valuable and careful piece of research; the following comments are not made with any intention to disparage its value. The difficulty has come from the interpretation which other people have put upon the investigation.

According to the figure the maximum earnings of high-school graduates is $2,800. College graduates, on the other hand, earned on the average over $6,000. Many people have assumed that the college education

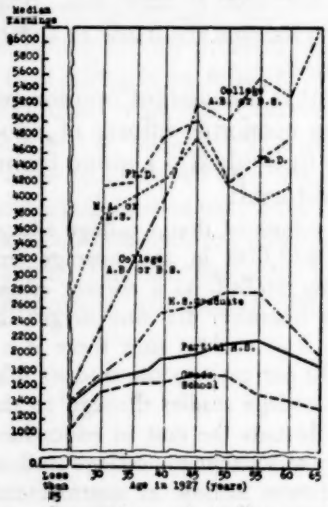

Figure 1. Comparison of median earnings of men at different educational levels (Lord)

caused this difference. It would be interesting to ask these same people if the training represented by an M.A. and Ph.D. lowered the earnings of the people who have these degrees. According to the chart people with such degrees make less than those with A.B. degrees.

Part of the study by Dean Lord was quoted by one of our most important state universities and broadcast over the state with the comment: "It is obvious from the figures that a college education pays." Such arguments may, and in fact I think have actually, at times, caused great economic maladjustment. The argument in another form for the lower levels of education appeared on a poster, headed "Every day spent in school pays the child nine dollars." Here is the proof:

> Uneducated laborers earn on the average $500 per year for forty years, a total of $20,000.
>
> High-school graduates earn on the average $1,000 per year for forty years, a total of $40,000.
>
> This education required 12 years of school of 180 days each, a total of 2,160 days in school. If 2,160 days at school add $20,000 to the income for life, then each day at school adds $9.02.[2]

This particular chart appeared in a bulletin widely distributed by the United States Bureau of Education. A second poster, "What Four Years in School Paid," also included in this bulletin, after a display of figures admonishes the reader to "notice that at twenty-five years of age the better-educated boys are receiving $900 per year more salary and have already in seven years received $2,250 more than the boys who left school at fourteen years have received for eleven years work."[3]

HOW have these estimates of the money value of an education been made? The most widely quoted studies have compared the earnings of a group of people which went on to school with the earnings of a group that did not go to school so long. Because the earnings of the group which

[1] Lord, Everett W. *The Relation of Education and Income.* Indianapolis, Indiana: Alpha Kappa Psi Fraternity, 1050 N. Delaware St., 1928. Charts III and V, pp. 11 and 16.

[2] Ellis, A. Caswell. *The Money Value of Education.* Washington, D. C.: Government Printing Office, 1917. p. 32 (U. S. Bureau of Education Bulletin, 1917, No. 22)

[3] Ellis, *op. cit.*, p. 28.

went on to school were larger, the authors of the studies concluded that schooling had some part in producing that result. What do we know about the ability of the two groups, what about the family connections, the business openings, the inherited wealth, and other advantages of the group that went on to school as compared with an average group?

A certain class that had been out of one of our best colleges for ten years had an average income of $12,000. We should doubtless be told that the college education had produced that result. Such an income is easy to obtain if your parents will give you securities to produce most of it. The boys who go to college have larger incomes in later life than the boys who do not go. What of it? Boys who own private yachts, and boys who go to expensive private schools also seem to have larger incomes than the average boy. There even seems to be evidence to show that boys who go to expensive summer resorts have larger incomes in later life than boys who work in the summer. Does this mean that boys should not work in the summer? If the people who have made the studies of wages and schooling wanted to know the effect of schooling, why did they not equate the two groups in regard to other factors than schooling? This was not done. For this reason I do not see how the results of the studies can be accepted.

There are about eight hundred thousand students in the United States in institutions of or above the collegiate level. A large proportion, if not most, of these are preparing for the professions of law, medicine, engineering in all its branches, teaching, ministry, dentistry, architecture, journalism, and so on. The total employed in all these professions in America is about twice this number. Wages, including salaries, are governed by the supply for service in relation to the demand. It is reasonable to ask what will happen to professional salaries when the eight hundred thousand goes to one million and to a million and a half, as it surely will. Moreover, of the almost four million high-school students, the attempt seems to be to try to get as many as possible in the professions and clerical occupations. And yet, each day someone answers that schooling is worth eight or ten dollars per day, depending upon the last article he has read, which deals with the money value of schooling.

ARE there any facts in the past that will enable us to guess more correctly what will happen from the pressure of these large numbers of people with advanced education trying to get into a limited number of positions? The fall in the salaries of clerks in the last hundred years is enlightening. A hundred years ago clerks were relatively highly paid. Since then there has been a tendency for the real wages of clerks to drop. "There is a plethora of persons qualified to do clerical work and a consequent tendency of their wages to fall rather than to rise," says Taussig.

You cannot train one hundred thousand people for ninety thousand jobs without creating pressure to decrease the remuneration of the ninety thousand. You cannot have eight hundred thousand people in college year after year and expect them to compete for

sixteen hundred thousand jobs without lowering salaries sooner or later. You cannot have the present percentage in high schools and expect them all to go into the "higher callings." If all tried to do so, salaries would drop to unbelievable levels. The so-called "higher callings" might even be more overcrowded than the field of unskilled labor is today. Educated people receive higher wages, Professor Edie pointed out, not because they were educated but because they are scarce. Increase the supply of educated people and you lower their individual wages.

There is a mass of evidence to support the contention that college training does not necessarily lead to a large income. Two tables will be presented to illustrate this type of evidence. The first shows the earnings of all gainfully occupied people in the United States and also the earnings of teachers. A comparison of teachers' salaries with the incomes of various groups of gainfully occupied persons in 1926 may be made from the following figures:

Average income of all gainfully occupied persons	$2,010
Average earnings of trade-union members	2,502
Average salary of high-grade clerical workers	1,908
Average salary of teachers, principals, and superintendents in public schools	1,275[4]

[4] These figures are based upon a number of income and wage investigations cited in "The Advance of the American School System," *Research Bulletin of the National Education Association*, V (1927), p. 211.

Since these figures are quoted from a research bulletin of the National Education Association, it should be reasonable to assume that they would be fair to the teachers' salaries. There is a substantial error in the work, but it does not change the point of the illustration. The average earnings of trade-union members is given as $2,502; the average salaries of public-school teachers, principals, and superintendents as $1,275. This group of teachers is the largest group of college-trained people in America. Probably seven hundred thousand of these people have had at least one-half of a four-year college course. Over one-half of all the teachers have probably had more than fourteen years of schooling, while the average trade-union member has had about one-half this amount.

THE question I should like to ask those who insist that higher education necessarily leads to higher incomes is: "How does it happen that the largest college-trained group in America is making a salary approximately one-half of what trade-union members have earned?" The first answer might be that teachers are a special group outside the work of economic law—an inadequate answer.

Table I presents the facts in regard to another large group of people. It is of more than passing interest that in private-duty nursing eighth-grade graduates have a larger income than nurses with three years of college. I doubt if one can read this table and insist that college training necessarily leads to fame and fortune.

To compare the earnings of two groups without further information is inadequate. If we really want to know the effect of education upon individual earning power, we will have to compare groups of approximately equal ability and advantages in all other respects. Unfortunately, this has not

been done. For some time we have been collecting data about the income of people who are as nearly equal as possible otherwise, but who differ as to the amount of schooling which they have had. Although the results are only tentative, our findings do not agree with former opinion.

Why has no one compared the incomes of brothers of equal ability who went to school different lengths of time? What would you expect the result to be? We have been making such a study in a preliminary fashion. Our preliminary results show that the longer one goes to school above a certain minimum, the less is his income. The results rather consistently show that the man who went to school longer has a smaller income than his brother who did not go so long. To be perfectly honest about it, is there anything in a liberal-arts education that should increase the income of a person? If two people are of equal ability to begin with, is there any reason to suppose that four years in a liberal-arts college will be more valuable as a training for business than the same four years in business would have been? It may be observed that in so far as college experience intensifies the tendency to think and ponder over a situation, it may unfit one for some types of business enterprises in which quick, decisive, and daring action is essential to success.

TABLE I

SALARY RECEIVED IN 1926 BY THE MEDIAN OR MIDDLE NURSE IN EACH EDUCATIONAL GROUP[a]

Schooling	Private Duty	Public Health	Institutional Maintenance (Incl. $500)
(1)	(2)	(3)	(4)
Under eighth grade	$1,275	$1,567	$1,850
Eighth grade	1,350	1,608	1,922
High School—			
One year	1,261	1,647	1,852
Two years	1,268	1,671	1,829
Three years	1,347	1,664	1,989
Four years	1,289	1,669	1,981
College—			
One year	1,290	1,740	2,053
Two years	1,275	1,846	2,045
Three years	1,150	1,875	2,399
Four years	1,467	1,860	2,114
One year postgraduate	.....	1,850	3,550

[a] Burgess, May Ayres. *Nurses, Patients, and Pocketbooks.* New York: Committee on the Grading of Nursing, 370-7th Avenue, 1928. Table 62.

SCARCITY is a necessary element of value. Educated people, as Professor Edie observes, receive higher wages only when educated people are scarce. In the past, education had a scarcity value, due to the fact that relatively few people were receiving it. With the large increases in the number receiving education, the former value due to scarcity or monopoly has tended to disappear. In the place of a monopoly price, some types of education are now valued on a surplus basis. This means that where formerly the person with the training had an advantage, he now is at a disadvantage. This is the natural result when people are trained in disregard of the number of people which should be trained for any field.

Someone will reply, "Yes, but the training should be given for its cultural value. Our people should have the training for the sake of the training." We are perfectly willing to admit that many kinds of education should be given for cultural purposes that do not pay economically. Our only contention is that such an education then becomes an element in consumption and does not, and should not

be expected to, increase production. Neither should it be expected to increase the earnings of the individual who receives the training

A smaller amount of education supplied to people in general would doubtless increase the value of such training to people who had it. A large amount would doubtless be of greater utility for the world as a whole. The effect of education may be such that it does not increase the income of the individual, but at the same time it may greatly increase the economic welfare of society. More education may have much greater utility for society as a whole than a smaller amount. Although the proposition needs much more careful study in the future, at present there seem to be good reasons to think that education increases the total income of society. This is, of course, possible without at the same time increasing the income of the individual who has it.

It is widely agreed that what removes barriers to free entrance of people into occupations, thereby increases the income of the nation. This position is clearly stated by Fairchild, Furniss, and Buck when they say, "To the degree that education breaks down the barrier between labor groups, it will tend to lower the higher wage income and raise the lower, at the same time increasing the average."[5] Free education without doubt would remove barriers to certain occupations. This alone is enough to suggest that all education should be free. When we say all public education, we mean all productive education, including professional education. Who would benefit if medical education were made free and offered to as many as wanted it? The public would benefit in reduced medical charges. The same would be true of engineering, of dentistry, of law, and of the other professions. One way to get cheap agricultural products is generously to support agricultural-experiment stations in order that they may increase the supply of agricultural products. In fact, the efficient way this has been done and the unplanned way in which it has been done are doubtless partial causes of the present agricultural depression.

Do you want to know how to increase your income and the income of the group to which you belong? Limit the number in the group. It makes no difference whether this is done by higher standards of training or by higher cost of training. How can society get lower costs in medicine, engineering, and the other professions? Increase the number of people in these fields. This can be done by lowering the cost of entering those fields. If you want to raise the value of Ph.D's, lower the number.

IN the past America has witnessed the unusual spectacle of professional groups trying to increase training facilities and the number of people going into the profession, and at the same time expressing dissatisfaction at the remuneration of those already in the profession. If the number in any profession is greatly increased, the remuneration in that profession will go down. However, society at a particular time may need a great increase in the number in that particular field. The point to be emphasized is the dis-

[5] Fairchild, F. R., Furniss, E. S., and Buck, N. S. *Elementary Economics.* New York: Macmillan Company, 1926. Vol. II, p. 296.

tinction that must be made between the economic return to the individual and the economic return to society.

The outstanding reason that education does not pay the individual is that it is not planned. According to a bulletin distributed by the United States Bureau of Education:

> In 1910 students to the number of 113,685 were training for about 630,000 teaching positions, or one prospective teacher for every 5.5 teaching positions. In 1926, teacher-training students numbering 494,000 were preparing to take over about 990,000 positions, or one prospective teacher for every two positions.[6]

Such a situation is not economically justified. If this situation is allowed to go on uncorrected, it will and should lead to lower salaries for teachers. Long service, expensive training, even great utility of services performed are no justification for high salaries for teachers or anyone else. This fact is well stated by the following quotation from a paper handed in by one of my students who was studying the question of what is a fair wage. "If teachers' wages are low, compared to the wages of people of equal ability and training in other occupations, it is a sign of maladjustment of occupations, not unfair wages." We must realize that in our economic order a lower price is the means of correcting an oversupply.

Some one may answer, "Will not the fall in wages by itself correct the oversupply?" Yes, it will tend to do so but at untold cost in human suffering, at great economic loss, and over a generation or two. The outstanding fact from all of our study is the necessity of planning our educational offerings in terms of the economic needs of society.

PART of education is in the nature of consumption, and part in the nature of production. Both parts should be provided for. The part to aid production must be planned in terms of the economic needs of society. Educational facilities must be set up to train the numbers of lawyers, doctors, engineers, and farmers which are needed for the best running of the economic order. This is the challenge to the educational leaders of today, to plan an efficient educational system. If space allowed, it could be shown that a planned system of education would still leave the individual free to choose any occupation he desired.

Where is the state that has an educational plan, a plan to educate the number of people it needs in each occupation? We have city-planning commissions, we plan our streets, our parks, our harbors, we have even begun to plan our schoolhouses. Yet, so far I do not know of a single state that has tried to work out a plan of what the educational program should be, in terms of the economic needs of the state. What state will be the first to draw up a really comprehensive educational plan in the light of the best contribution of economic theory, in the light of the needs, interests, capacities of the people, and in the light of the number of people needed in each field? The state which first does this will undoubtedly write a new chapter in the history of education.

I do not think you can judge the desirability of education by economic

[6] Phillips, Frank M. *Statistics of Teachers Colleges and Normal Schools.* Washington, D. C.: Government Printing Office, 1927. p. 2 (United States Bureau of Education Bulletin, 1927, No. 30)

standards alone; you must also have some higher ethical or spiritual standards. But this makes it all the more important that we know how much education is economically defensible, how much aids production, and how much is consumption. Only then will it be possible to decide intelligently how much of each kind of education should be provided.

This article might be called a plea that some state university president, some state superintendent of public instruction, or some one else in a key position see the possibility of a continuously replanned system of education, planned and expanded in terms of the occupational and economic needs of the state; see the possibility in leading toward the abolition of unemployment, the stabilization of the working of the economic system, the abolition of poverty. As long as we blindly assume that any amount of any kind of education is economically good, little will be done to bring about that constantly replanned educational system which means so much to economic improvement and general human welfare.

The Preparation of Freshmen

By LUELLA COLE PRESSEY

The Report of an Investigation of the Skill of Freshmen in Four Essential Subjects

FOR the past three years investigation of the previous preparation of Freshmen in various colleges has been going forward at Ohio State University. During Freshman Week each year tests, more or less complete, have been given which have been intended to measure only such essentials as seem necessary for any Freshman to possess regardless of the course or college he may enter. Extensive research has been carried on during the past year to determine more thoroughly just what should go into these tests of preparation. There has been a good deal of interest in the problem of what constitutes basic preparation and the extent to which each student possesses these facts, skills, and attitudes; for many students are unsuccessful, because they are inadequately prepared. It has seemed of interest to present some data concerning the preparation in certain specific and undeniably basic skills as shown by a large number of entering Freshmen. For this purpose an analysis has been made of one series of these tests.

During the Freshman Week of 1928 two hours—an inadequate amount of time—were devoted to testing the general preparation of Freshmen. The tests used covered the elements of mathematics, reading of expository material, the fundamental concepts of grammar, and certain necessary skills in written English. Practically all students finished the tasks set. The tests were given during the two-hour period allowed; then the scores were read at once to the students so that they might see how well they had done. As a result of this effort to inform the students themselves of their deficiencies, there were some dishonest scores, for some students, as the answers were read, wrote in the answers which they had previously omitted. The amount of cheating was not great, but it would probably raise the results at least 5 per cent above what they would have been had the answers not been read. In tabulating the results no attention has been paid to the scoring done by the students; everything was rescored by competent individuals. For this research, 1,053 papers of boys—approximately every other one—and 523 papers of girls—two-thirds of all that entered—were used.

THE mathematics test called for the execution of five arithmetical skills and seven algebraic skills; there were also two problems which required knowledge of geometry. The test was designed to cover the absolute minimal essentials of mathematics

for work in any college science. The following table presents the skills demanded and the percentage of the 1,576 students demonstrating each:

Operations	Percentage Correct
Adding fractions	80
Dividing fractions	61
Multiplying decimals	80
Dividing decimals	60
Simple percentage	80
Substituting values of three variables in a formula	84
Solving a simple proportion (simple enough to be done by inspection)	35
Knowing the relationship "the square on the hypotenuse"	58
Working a simple proportion of the relation of lines in two triangles	26

Three questions of each type were presented. From the figures listed it is clear that the arithmetical skills have been mastered by 60 to 80 per cent of the students and the two geometric skills by 26 to 58 per cent. The simple equations used to test algebraic skills were solved by from 18 to 74 per cent. On the average, these problems were solved by 54 per cent—surely an inadequate mastery of work in college.

The comprehension scores of the Whipple Reading Test ran from 1 to 20—a perfect score—with a median of 11.6. The speed scores ran from 42 to 198 words per minute, with a median of 137. Thirty-seven per cent of the Freshmen showed a rate sufficient to read a page of ordinary type in from one and a half to two minutes, while 16 per cent required three minutes or more per page. When the speed and comprehension scores were considered in relation to each other, the average Freshman understood 77 per cent of whatever amount he had finished when time was called.

Such facts suggest that many students will have difficulty in reading either well enough or fast enough to keep up with their work. If only 77 per cent of simple expository matter is understood when the passage is before the student and can be consulted, one wonders how much will be permanently retained. The wide range of scores should also be noted. It would be foolish in the extreme to expect students of such varying abilities to carry equal reading loads, although most college teachers do assume such a homogeneity of reading skill. The fastest reader read more than twice as fast as the slowest.

The test of grammar consisted of sentences in each of which the students were asked to mark some such element as "the subject of the main verb," "the antecedent of the pronoun," "the appositive," "the subordinate clause," "the adverb," "any word that is in the plural," "the participle," and so on. It should be noticed that the test requires merely a recognition of these concepts as exampled in an actual sentence. The following list indicates that the concepts tested were of a fundamental character; success is measured by the percentage of students knowing each of them:

Concepts	Percentage Correct
Subject of main verb	26
Object of main verb	53
Predicate	9
Appositive	41
Possessive	68
Subordinate clause	53
Main clause	59
Phrase	25
Relative pronoun	38
Antecedent	34
Noun	73
Adjective	75

Concepts	Percentage Correct
Pronoun	69
Verb	65
Preposition	47
Conjunction	76
Singular number:	
Of pronouns	70
Of nouns	73
Of verbs	39
Plural number:	
Of nouns	74
Of verbs	50
Present tense	73
Past tense	74
Participle	58
Infinitive	53
Agreement	35
Modify	41

It would seem from these results that the average student cannot be depended on for much familiarity with grammatical forms. The only concepts known by as many as approximately three-fourths of the Freshmen were: noun, objective, conjunction, singular, plural, present tense, and past tense. Ten of the 26 concepts were known by less than half. Evidently, the teachers both of English and of foreign languages will need to investigate the presence of even such simple concepts as are shown here, and they should plan their teaching in terms of the results unless they are willing to go on overestimating the preparation of their students.

The majority of the errors made by students in their written work seem to center around errors in punctuation and in sentence structure. The brief test used was, therefore, restricted to these two phases, and the most frequent types of errors were chosen as a basis for the test. The students were first asked to re-write five sentences, each of which necessitated the correcting of a single common error. The results are given in the tabulation which follows, and the percentage of Freshmen who were able to correct the mistakes in their re-writing was:

	Percentage Correct
Fragmentary sentence	77
Comma splice	84
Dangling participle	89
Stringy sentence	49
Pronoun with no antecedent	27

The rest of the English test comprised nine sentences in which punctuation marks were needed. In one sentence—mentioned last in the next table—no punctuation marks were needed; the error usually consisted of inserting marks which were unnecessary. The constructions demanding punctuation and the percentage of Freshmen correctly solving them are listed here:

Punctuation Needed	Percentage Correct
Commas around appositive	84
Commas in divided quotation	85
Commas in series	84
Comma in one-half of semicolon sentence	65
Semicolon between clauses when conjunction is omitted	63
Semicolon between clauses when the clauses have commas within themselves	57
Quotation marks (line under) around title of book	49
Quotation marks (line under) around title of theme	77
Quotation marks around both parts of divided quotation	73
Apostrophe in contractions	62
Apostrophe in singular possessives	65
Omitting quotation marks from an indirect quotation	77

These English tests give better results than the others, but only seven of the twelve fundamental skills were mastered by as many as three-fourths of the students. Any teacher of fresh-

man composition will agree that these findings are quite typical.

THE obvious fact is that students are not prepared as they need to be for success in college. It will, however, do no good to rage about the inefficiency of high schools—too much talking and too little investigating has been done already. It may be that the college is as much at fault as the high school. The high-school official may be justified in saying that collegiate requirements are so unrelated to life's ordinary needs that he cannot see their value. There is probably truth on both sides of the argument.

In the opinion of the writer three things may be done to help the situation: Collegiate curricula should be analyzed and evaluated. Some courses may not be worth the work necessary to get ready for them. If this is the case, a reconstruction of courses in college may permit students to get along much better than at present even though the preparation remains unchanged.

The courses of the college should also be analyzed to discover just what elements of preparation are needed—and the prospective students should be drilled in the mastery of these necessities. Much poor preparation may be due to the failure to know what really is needed. With such information at hand the high-school teacher may have more definite objectives, and the college teacher may know what skills his students need to have, may test them to see if they possess these skills, and may then proceed on the basis of the results.

The high schools, for their part, should examine their courses. Especially do they need tests to determine to what extent their pupils are mastering subject-matter. The writer doubts if any school intends to send students to college who cannot add fractions, cannot recognize the subordinate clause in a sentence, or do not habitually enclose an appositive between commas. It is more likely that high schools do not know that their graduates are lacking in these skills, because they so rarely test the pupils to find out and still more rarely take any definite, forceful action on the results. The writer ventures the opinion that, in a relatively short time, the average student could be brought to a practically perfect score on the items included in these tests and that most students would be willing to spend the time if they could feel assured of having, at the end, a sufficient preparation to get along in their freshman courses.

The problem of articulation between secondary school and college is an old one, about which much has been written. For the most part, however, previous writings have been based on opinions—and the opinions expressed depended upon which school one was in. Scientific research in education is gradually showing that consensus is not an adequate statement of the actual facts and that the mere amassing of opinions is not likely to settle anything. It does appear, however, that many arguments of long standing are in a fair way to settlement through research. The writer would like to suggest that the problem of proper articulation between schools of different levels can be attacked scientifically and impersonally. If enough research is done so that the

true facts are known, there will be real hope of solution, and that innocent bystander—the student—will cease to carry the burden of trying to adjust an inadequate preparation to a possibly outworn curriculum.

IN this article the results of some tests in previous preparation given to 1,576 Freshmen at entrance to college are listed. Facts are presented which show inadequate preparation in mathematics, reading, grammatical concepts, and English. These results are presented by items, so that specific deficiencies may be seen.

The writer suggests that the situation may be improved by the analysis of college curricula showing their values, by the analysis of freshman courses listing the actual preparation needed, and by the analysis of high-school courses indicating the achievement of the students. The suggestion is made that this matter of articulation between high school and college can be attacked scientifically and made the subject of constructive research.

Medical Education

By W. C. RAPPLEYE

Proposals for the Reorganization of Medical Education Are Suggested in This Article.

MEDICAL education in this country began largely as vocational training for the practice of medicine. It is now in the process of being absorbed into the university organization on a basis comparable to other fields of higher education but with many problems not found in them, such as responsibility for the care of the sick and problems of medical licensure.

During the latter part of the last century provisions did not exist for the training of a sufficient number of physicians to supply the needs of the country. The sparsity of the population, the great distances, and the lack of facilities for communication and transportation required an abnormally large number of physicians to meet the demands for medical attention. We had few universities able to provide a thorough training, such as existed in Germany or Switzerland, and few hospitals able to assume the burden, as in England and France. The only device was apprenticeship training which continued for a time the chief method of training physicians.

Later, groups of physicians organized classes, constituted themselves faculties, obtained charters, and proceeded to teach medicine. In response to the public need and stimulated by the ease with which a medical education could be secured, compared to European requirements at the time, the student body grew rapidly. Professional and financial rewards for those who conducted them made the proprietary schools popular and profitable. By 1904, there were 162 medical schools in the United States, one-half the total number in the world. Most of the schools, were inferior in facilities, equipment, and teaching.

After considering this situation, the American Medical Association began its work of standardization and classification of medical schools in 1907. The standards it set were gradually adopted by different states and were required for licensure to practice. These requirements, to be legal and enforceable, had to be specific, detailed, and rigid. In a short time, the accepted standard of medical education became fixed on a basis comparable, in general, with requirements abroad. The number of schools now rapidly diminished, either by combination with one another or by discontinuance. Many of them could not hope to meet or maintain even a reasonable standard of excellence. As a result of these efforts and the publicity given to the program, the number of medical schools dropped from 162 in 1904 to the present number of 76 approved schools, only 66 of which

give a full four-year medical course. The student body dropped from twenty-eight thousand in 1904 to about thirteen thousand in 1919; and the graduates, from fifty-seven hundred in 1904 to twenty-five hundred in 1922. Since then the student body has returned to twenty-one thousand and the annual number of graduates to forty-five hundred.

During this period revolutionary advances in scientific knowledge took place. The microscope opened entirely new fields of knowledge; the bacteriological and parasitic theories of disease were developed, bringing antisepsis and asepsis and opening the possibilities of modern surgery and the treatment and protection of individuals against some of the common diseases. Our knowledge of chemistry grew by leaps and bounds and with it our understanding of many physiological and abnormal conditions. New devices and instruments for examination and treatment were produced with great rapidity, many of which required especial technical skill. The X-ray, radium, vitamins, and certain newly discovered factors in growth and nutrition suggest the diversity of new ideas in medicine.

THIS enormous body of new knowledge has led the different states to add to the requirements for the license to practice. Moreover, each state has required new courses and examinations in the various fields with little consultation with other states. The result has been a great overcrowding of the curriculum and an increasing difficulty of the medical schools in satisfying the states' requirements for licensure.

In 1925, a Commission on Medical Education, representing the universities, the medical sciences, the clinical branches, and medical licensure, was organized to deal with the situation. The most pressing difficulties were the rigidity, the overcrowding, and the overregulation of medical education as already outlined. The Commission, after collecting available data and consulting many persons familiar with the problems, has endeavored to assist in modifying the general attitude toward medical education.

The first action of the Commission was to arrange with the state licensing bodies for a truce of five years during which the medical schools might experiment with medical education without penalty to its students. It was the hope of the Commission that during the five-year period a permanent arrangement would be made which would allow greater freedom on the part of the universities in conducting medical education. As a matter of fact, at the last meeting of the Federation of State Medical Boards a resolution was adopted which aimed to place, as far as possible, all matters dealing with details of the medical curriculum in the hands of the medical schools as represented by the Association of American Medical Colleges. This significant action opens an opportunity to introduce flexibility into the curriculum and places greater responsibilities upon the universities for medical training. In the meantime, a number of medical schools, acting under the truce established four years ago, have been conducting experiments in medical training, and already a certain body of experimental data is available.

MEDICAL education in this country has been separated from other forms of education until quite recently. It is now becoming increasingly clear that it is not an isolated problem of professional training but is closely related to the whole problem of higher education. If medical education is to be looked upon as a part of higher education rather than merely vocational training, the general objectives to be sought must be revised to some extent. All true education is self-education. One important purpose of medical training is to equip the student for his own self-education throughout the rest of his professional life. We should be interested in developing in the student not only sound methods of self-education but sound habits as well. There are already indications in many medical schools of this new point of view, as witnessed by the breaking down of the rigid class system, the discontinuance of uniform time and course schedules, the use of small teaching sections, personal contacts between students and instructors in the laboratories and the wards, provision for a reasonable amount of free time for reading and leisure, the reduction in the amount of lecturing, the use of electives, and the introduction of comprehensive instead of departmental or subject examinations. These changes not only place great responsibility upon the student for his own training but provide freedom and incentive for students to satisfy any scientific curiosity that may be aroused.

There is also a trend toward making the medical course a unit—an endeavor to correct the division of medical science and clinical medicine into mutually exclusive compartments. Everyone recognizes, of course, that it is impossible for a student to master all phases of current medical knowledge. Hitherto, an endeavor has been made to teach too many details too early. A number of schools now provide basic introductory courses for the purpose of orientation, while details and specialization are left until later.

Premedical requirements have been prescribed with little regard to the student's knowledge of these subjects. Many premedical subjects are subdivided into special fields of study which provide relatively little training in the most important features of the subject. It has been suggested that, instead of accepting course credits for admission to medicine, examinations covering the general subject be given in the so-called premedical sciences.

A second point of interest in premedical training is motivation. Most of the courses in the preliminary sciences are given by specialists who emphasize their own particular interests rather than general principles. Thus, physics in many university courses is presented as mechanics or hydraulics—topics of particular interest to engineering students. Courses in chemistry frequently deal chiefly with the metals and with gravimetric and volumetric methods and, in organic chemistry, with dyes and other features important chiefly in commerce. Courses in biology are frequently in fields of botany or animal classification, which do not aim particularly to drill in the fundamental principles of living matter. There seems to be little doubt but that a reorientation of the subject-matter in the preliminary

sciences could easily provide students with a better comprehension of the principles of these subjects, not only for medicine but equally so for general education.

THE difficulties of mass education in colleges need not be dealt with in detail here. The pressure of the student body in colleges is reflected in part by the increasing numbers of applicants for admission to medical schools. The figures given in Table I illustrate the situation and suggest some of the difficulties of selecting students. Multiple applications are the rule, some students applying to thirty or more schools; several hundred students are accepted each year by more than one school. The difficulties of selecting students have a tendency to force admission committees to pick students who have done more than the minimal amount of required work in the specific premedical subjects. Promising students who defer their decision to study medicine until their final year in college are unable to get into a medical school because of the fact that they have sought a liberal education and in doing so may not have satisfied the prescribed entrance requirements. These and other factors are operating to force another method of selecting students than by courses and the length of preliminary education. Aptitude and other tests are being tried in an endeavor to find an additional aid.

In short, in the medical sciences, there has been great overcrowding; the students have been obliged to memorize too many details too early, often before they have become oriented in the work; the different departments frequently have been isolated and their courses have had little regard to the work of other departments carrying instruction simultaneously or subsequently. Some of these difficulties can be corrected by making the first courses introductory in character, the details to be filled in later; by allowing some freedom for reading and thinking; by paralleling instruction between departments when possible; by what the British call "infiltration," both upward and downward, in which the whole medical training becomes a unity, not a series of isolated subjects; by a more intimate co-operation of the teachers in different subjects; by teaching the anatomy and physiology of living human beings rather than relying too much on animal experiments; and by using the laboratory to illustrate and illuminate subjects and methods rather than to emphasize technical procedures.

TABLE I

ENROLLMENT IN MEDICAL SCHOOLS

	No. of Applications	No. of Applicants	Applicants Accepted	Applicants Enrolled
(1)	(2)	(3)	(4)	(5)
1926-27....	20,093	8,500	6,420	....
1927-28....	23,590	11,282	6,495	6,009
1928-29....	29,166	12,537	7,014	6,199
1929-30....	31,481	13,569	7,019	6,277

The basic course of clinical instruction should be general in character and comprise general medicine, including pediatrics, general surgery, obstetrics, and diseases of the nervous system. There is a growing opinion that advanced training in these major subjects and the preparation for special practice should be postponed until after graduation. There has been a

considerable amount of confusion in the teaching of the clinical subjects because of the demands of the various specialties, often supported by state licensing board requirements, as well as in the advanced teaching of technical methods in general medicine and surgery. Clinical teaching has evidently been overdone, and many schools are now simplifying their plans of instruction. The correlation of teaching in the different subjects is being brought about by many devices, one of the most valuable of which is the comprehensive examination. This type of examination is proving to be particularly effective in stimulating students to correlate otherwise isolated information to bear on a particular problem; it has the merit of getting the student to work out correlations himself without the defects of "spoonfed" correlation.

The prevalence of many preventable diseases and much preventable incapacity and lowered productivity is a direct challenge to medical practice and teaching. Hence, the preventive aspects of medical service are receiving increased emphasis. For example, efforts are being made in a few medical schools to emphasize the features of periodic medical examinations, and most schools give attention to the care of normal children and to early precaution in obstetrics. Only recently, however, has there been an attempt to mobilize the whole curriculum to present the preventive aspect of each subject, an aspect which can be made important in a subject like physiology.

The importance of therapeutics is being re-emphasized. The help to be secured by rest, proper diet, mental hygiene, exercise, sunshine, and other physical agencies has not been properly stressed in much of the teaching which has for a time been so largely concerned with laboratory diagnosis and technical methods. A type of "physiological thinking" is coming into therapeutic procedures.

THE interne period, now regarded as an integral and probably the most important part of the basic training in medicine, has certain features needing correction. The interne is used too frequently for the purpose of the hospital or staff, without due consideration being given to his educational experience. The student is taught to depend too much upon specialists, consultants, nurses, laboratory workers, X-ray departments, dietitians, and the other personnel of the hospital staff. The many services provided for the diagnosis and care of hospitalized patients, for investigative work and hospital records are all important for their several purposes, but the interne should not be taught that all these are necessary for the care of every patient. There is a strong belief that much is done in the hospital period to make the student unwilling or unable to practice medicine in communities where all or most of these special services which he has come to regard as necessary for practice are not available.

Postgraduate medical education is receiving an increasing amount of attention and promises in the near future to be one of the large problems with which the medical profession must deal. It is a question not only involving education, but has many implications of a sociological and economic character, involving the con-

tinuation education of all physicians in practice. It is possible that in time every physician will be required in the public interest to keep abreast of current developments in medicine.

The matter of post-graduate training has been touched upon to emphasize its relationship to the basic course in medicine. Any form of continuation or adult education is essentially self-education which is becoming more clearly recognized in medical training. The basic course should aim to provide sound methods and habits of study and to give the student a permanent intellectual equipment which will permit him to carry on subsequent self-education more or less independently. By limiting the objective of the basic course to a more or less comprehensive treatment of the principles underlying various divisions of medical practice, the physician should be more competent and reliable in subsequent specialization.

PROBABLY the largest problem before American medicine is the distribution of adequate health service to the entire population at a reasonable cost. A considerable gap exists between our knowledge of diagnosis, treatment, and the prevention of disease, and its application to the needs of individuals and communities. This whole problem is in reality one of medical economics. Its solution can be approached only by insuring that every doctor shall always be familiar with new knowledge and new methods in the treatment and prevention of disease. The production of physicians in excess of the needs of the community and overspecialization are further details of this problem. The cost of medical care arising from unnecessary services either recommended by doctors or demanded by the public and represented by hospitalization, unnecessary surgery, laboratory work, X-ray work, consultant services, nursing, and so on is another phase of this matter. The solution of many of these problems depends upon scientific knowledge as represented by medicine and by trained personnel whose efforts are co-ordinated for the best interests of the patient and the community. These problems require leadership of the highest order and place large responsibilities upon the medical profession in its organized capacity. These responsibilities should be emphasized in the training of medical students.

About ninety per cent of medical graduates go into clinical practice of some kind. The balance are an important group who go into laboratory, public health, research, or teaching posts and for whom opportunities for special training and advanced work are provided in most of the medical centers. From them are recruited teachers and investigators, for most of whom a broad basic training in medicine is of great value in their later work. The problems of their further training are similar, however, to those in all higher fields of research and advanced training. It is especially important that the training of personnel for medical teaching should emphasize the changes taking place in educational methods and the rapidly shifting problems of medical service.

Research on Higher Education

By DONALD W. MILLER

A Plea That the Results of the Work of Graduate Students Be Made Available for General Use

A LIST of theses in education presented by students for the Master's and Doctor's degrees in the various graduate schools in the United States between 1919 and 1928 was compiled by Walter S. Monroe, of the University of Illinois. According to this compilation, 250 out of 6,591 theses in education were on problems dealing with the work of higher education. Of these 250 theses on higher education, 65 were Doctor's and 185 Master's studies.[1]

Fifty-three universities conferred Master's degrees on candidates who had written theses on phases of higher education. Seventeen of the 185 Master's theses on higher education were written at the University of Chicago; twelve at the University of California; eleven at the University of Texas; ten at Columbia; nine, each, at the State University of Iowa and the University of Kentucky; eight, each, at the University of Southern California and Indiana University; seven, each, at Stanford and Ohio State Universities; and six, each, at the University of Nebraska and the University of Wisconsin.

Of the sixty-five doctorate theses on higher education, twenty-five were written at Columbia; six, at Harvard; five, at New York University; four, each, at Ohio State University, University of Chicago, and George Peabody College for Teachers; three, each, at the State University of Iowa, University of Washington, and Stanford; two, at the University of Minnesota; and one, each, at Indiana University, Cornell, University of Pennsylvania, University of Illinois, University of Pittsburgh, and Yale. Columbia, alone, has been responsible for 40 per cent of these studies between the years 1919 and 1928.

An analysis of the titles of the 185 Master's theses on higher education reveals that 20 per cent of them are devoted to tests and measurements, including entrance tests; 15 per cent to college and university curricula; 15 per cent to administration, including control, government, financial support, salaries, pensions, and the like; 10 per cent to college teachers and teaching; 9 per cent to the junior college; 8 per cent to history and description; 5 per cent to extra-curricular activities; and the remainder divided among extension work, vocational education, and guidance.

Study of the titles of the sixty-five Doctor's theses reveals that as far as this type of research is concerned, the problems of college and university administration received the most attention. Twenty, or approximately

[1] Monroe, Walter S. *Titles of Master's and Doctor's Theses in Education Accepted by Colleges and Universities in the United States.* Urbana, Illinois: University of Illinois, 1928.

31 per cent of the doctoral studies are on administration. Tests and measurements are the material of 17 per cent of the studies; college teachers and teaching, 11 per cent; college and university curricula, 11 per cent; history and description of higher education, 9 per cent; and guidance, 6 per cent. Other doctoral studies deal with the problems of limitation of attendance, junior college, and vocational education.

Few of the Master's theses are available to students of higher education. Abstracts of a few theses may be published in the educational journals, but this seems to be the exception rather than the rule. In the case of Doctor's theses mounting publication costs have led many institutions to withdraw the requirement that such studies be printed. Therefore, with a few exceptions, many of the results of students' research work on problems of higher education in our graduate schools are not available for reference. Doubtless much economy would be effected through lessened duplication of effort on the part of research students if the results of studies carried on in the various graduate schools were made more easily accessible. Seemingly a fuller description of a study is needed than is afforded in an annotated bibliography, but even that is more than is available at the present time. As an aid to co-operation in research a yearbook publishing the results of Master's and Doctor's research on the problems of higher education might fill a need. Such a yearbook might well contain among other things a concise abstract of each thesis stating the purpose, method, and results of the study. Not only would such a yearbook aid prospective research students, but it would also make the results of studies available to all.

Intelligence-Test "Delinquents"

By HAROLD A. EDGERTON

IT has been suggested that those who failed to appear at the appointed time for their intelligence test might be a biased sample of the university population. Most of those who have had occasion to remark about this population contended that they were probably an inferior group.

There were in October, 1925, and October, 1926, at the Ohio State University, 323 Freshmen who failed to take the University Intelligence Test at the appointed time. The relative frequency distribution of the test ratings of these 323 delinquents is shown in the following summary:

Intelligence-Test Percentile	Percentage of Cases
91-100	9.5
81- 90	7.7
71- 80	13.2
61- 70	9.3
51- 60	8.7
41- 50	9.8
31- 40	10.7
21- 30	9.2
11- 20	11.3
1- 10	10.6

Some ten per cent of the scores of an unselected freshman population may be found in each decile interval, the

difference between the delinquents and unselected freshman population is very slight. In Figure 1, the irregular line shows the same facts in terms of cumulative per cents—the per cent failing to attain the percentile scores of the unselected group. The straight diagonal line of the figure shows the same for an unselected population. This mode of presentation makes the differences between the two groups seem even less: it actually shows that the fluctuations of Figure 1 are accidental, due to the few cases (about 33 to each class) involved.

From these data it may be concluded that, as far as the distribution of intelligence-test ratings are concerned, those Freshmen who failed to take the intelligence test at the specified time do not constitute a biased sampling of university Freshmen. An investigation of the two groups with

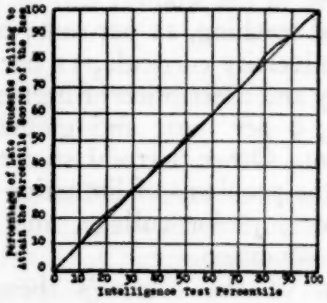

Figure 1. Percentages of 323 Freshmen who failed to take their intelligence test on time who made less than the rating specified at the base of the graph

references to other characteristics such as school marks, social situation, and so forth, might show slight differences.

WITH THE TECHNICIANS

Index of Neurotic Tendencies

Searching for a fairly reliable index of the neurotic tendencies of university Freshmen, Mr. Thurstone, of the University of Chicago, arranged a compilation of questions suited to the purpose from similar lists by Woodworth, House, Laird, Freyd, and Allport. At the University of Chicago the so-called "Personality Schedule" was filled in by 694 entering students during Freshman Week, 1928. From these the records of the fifty most neurotic subjects and the fifty least neurotic subjects were chosen, and a scheme of judging the scores was devised.

Describing this investigation in the *Journal of Social Psychology* for February, the authors—L. L. Thurstone and Thelma Gwinn Thurstone—remark that "there is considerable overlapping among the concepts of nervousness, emotional instability, social maladjustment, neurotic tendency, and psychopathological traits. . . . The neurotic personality as defined by the present schedule is more similar to introversion than extraversion."

The first comparison shows a mean score of 37.32 for men and 43.82 for women. The authors offer one of two possible explanations for this. Either the women students are more neurotic, on the average, than the men students, or women are more likely to tell about their idiosyncrasies than the men.

The mean score for non-fraternity men was 38.89, that for fraternity men 31.67, which shows that the Freshman who joined a fraternity a few months after filling out this schedule returned fewer neurotic answers than those who did not join the fraternities. The authors' inference is that a "Freshman with neurotic tendencies has a lower probability of becoming a fraternity man than his better-adjusted classmates. Evidently the neurotic personality is identified by other students, and it is avoided in seeking fraternity material." The women's clubs do not make so clear a case, but avoidance of neurotic tendencies is also evident.

Superior or inferior intelligence is found as frequently among the neurotic as among the socially well-adjusted. When marks and grade-points are considered, the neurotic end of the scale is higher than that for the emotionally adjusted. The authors' interpretation is that the neurotic students having fewer social distractions than the well-adjusted student may concentrate more on scholastic attainments. Matters of family life, position in the family, and sex life are considered in turn. The authors' final suggestion is that

> the fundamental characteristic of neurotic personality is an imagination that fails to express itself effectively on external social reality. . . . The biological function of imagination is here regarded as preparation for action, and imagination itself may be regarded as unfinished action. Its natural course is to complete itself in overt action. The neurotic personality is one which fails somehow in the relation between imagina-

tion and external social reality. All of the most differentiating questions (in the Personality Schedule) can be interpreted as special cases of this principle.

The Doctors Thurstone have in this list of questions prepared an instrument which may be used for similar purposes at other universities.

The criticism against the liberal-arts college which Mr. George Boas makes in the article, "What Can Be Done with the Liberal College?" in *Progressive Education* for February, is "not that it prepares men for 'life' but that it has so vague an idea of what 'life' is." The college admits that every man has to earn his living, but it denies that there is any reason why the liberal-arts college should become a professional school. "Even men who intend to specialize after leaving college would benefit greatly by the broadening of their curricula." It is proposed that every student should be compelled to minor in a "subject which on the surface seems utterly irrelevant to his major subject."

Reading Tests for Freshmen

Mr. H. A. Riebe gave three tests—the Thorndike-McCall Reading Test, the Whipple College Reading Tests, and the Nelson-Denny Reading Test for Colleges and Senior High Schools—to the members of the incoming classes in introductory psychology at Iowa State Teachers College in order to determine the relative usefulness of the tests. The Thorndike-McCall Test is, of course, not designed for college use, but it is often used with college students. The Nelson-Denny Test has just been published by Houghton Mifflin Company. Alternate forms were administered two weeks later.

The reliabilities, means, and standard deviations for each test are reported below. The reliability was determined by correlating the scores on the two forms of the tests.

	r	Number	Mean	SD
Thorndike-McCall	$.30 \pm .06$	106	72	9.6
Whipple	$.64 \pm .04$	120	10.7	2.8
Nelson-Denny	$.91 \pm .01$	143	78	22

The low reliability of the Thorndike-McCall test is no doubt due to the fact that the scores tend to pile up at the upper end of the range of possible scores. When used with lower grades the reliabilities reported are much higher. The reliability of the Whipple test is fairly high when the nature of the test and its length are considered. The time limit of ten minutes appears to be about proper. The Nelson-Denny test is the only one of the three which is sufficiently reliable for individual measurement, even when two forms are used. The reliability of this test, which consists of a vocabulary section and a paragraph-reading section, is no doubt to be attributed to the fact that the items have been rather carefully scaled. The construction of the test in two parts aids in the diagnosis of weaknesses. The time limit is thirty minutes.

The correlations of the scores on the first form of the test with the scores on informal objective tests of 300 points in psychology are:

	r	Number
Thorndike-McCall	$.19 \pm .06$	106
Whipple	$.38 \pm .05$	120
Nelson-Denny	$.57 \pm .04$	143

Of the ten persons in the lower decile on one form of the Thorndike-

McCall test, eight made a satisfactory grade in the subject; of the twelve persons in the lowest decile of the Whipple test, seven made a satisfactory grade; of the fourteen persons in the lowest decile of the Nelson-Denny test, only one made a satisfactory grade. That the last named test does predict about as well as the best intelligence tests is indicated by the correlation of .54 between term grades and the reading-test scores for about five hundred college Freshmen.

Little difficulty is found with the objectivity of any of these tests. Mr. Riebe concludes that the Nelson-Denny tests are thoroughly objective, all the questions are in multiple-choice form. In the other two tests an occasional response may be subjectively scored. The Nelson-Denny tests have a decided advantage in scoring, being put up in the Clapp-Young Self-Marking series so that the student indicates the correctness or incorrectness of his response automatically at the same time as he indicates his answer.

In the Whipple test the items are not carefully graded, some of the more difficult items occur early in the test. The same is not true of the other tests discussed.

Remedial Assistance

The results of a quarter's work in teaching university students how to read more efficiently has recently been reported by Dr. Luella C. Pressey, of the Psychology Department of Ohio State University. One hundred and thirty-eight students were chosen for the experiment, and their scholastic achievement was compared against the work of 215 untrained students having the same initial standing in both reading and intelligence tests taken at the beginning of the experiment. The students trained in reading achieved a classroom average of 1.72 out of a possible 4.00, or nearly equal to "C" standing. The 215 students of like ability but without special training in reading achieved an average of only 1.24, or barely passing grade.

No academic credit is given for this special training in reading. Instead, it is part of the University's remedial program for helping individual students make the most of their educational opportunities.

"Aristotle," writes Edgar Wallace Knight in the *Journal of Adult Education* for January, "complained that Hippodamus, who contrived the art of laying out towns, was too eager after notice, wore a coarse vest not only in winter but in hot weather as well, and seemed otherwise to live in an affected manner and to burn with a fierce desire to be known as a universal scholar."

Ever since the University of Chicago and the University of Wisconsin back in the early nineties found that they could and should minister to more people than those who actually enter the campus gates, protests have been made against the university going afield. The dean of the liberal-arts college says that Hippodamus has returned.

The author traces the history of extension efforts on the part of university professors from the time of the early Greeks. Through Demonax, Paros, Hippodamus, Alcuin, Abelard,

Melanchthon, Benjamin Franklin, and Thomas Jefferson, have come down from the distant past ideals of an educational institution serving the people at large. "Both in its origin and in its record for usefulness the idea of expert service to the state by teachers and organized educational agencies has a respectability not merely to mention but to brag about."

Warming up to his subject Mr. Knight continues:

Now that Thorndike and other scientists find that adults can go on learning if the opportunity is afforded them, the need for Hippodamus is greater than ever before in the past. It begins to look as if he has returned to stay. Of course, Aristotle will continue to hang around also and to thumb his nose and poke fun at the experts' garments. That bright boy of the Academy would, while Hippodamus goes up and down the state beautifying towns, building roads, analyzing drinking water, eradicating mosquitoes and malaria, improving sewer systems, encouraging the establishment of libraries, equalizing tax burdens, improving county government, advising in the interest of the better schools, improved workmen's compensation and child-labor legislation and better election laws.

The President

Statistics on college and university presidents are not so easily picked up as statistics on high-school or elementary-school principals and city superintendents. The teachers' employment bureaus devote their time to school men below the rank of president. The selection of a president for any college or university these days is no small job. It is of interest therefore to look over an article, "Some Facts about College Presidents," by Homer P. Rainey, of Franklin College, published in *School and Society* for October, 1929.

He finds that about 97 per cent of our college presidents have come from two professions—teaching and the ministry—and believes that these form excellent training. Examining the teaching experience of 124 college presidents he finds the median year to be between fourteen and fifteen, "surely a worthy period of apprenticeship." As to what these presidents taught in their ante-presidential days, Greek and Latin lead all other subjects. More held LL.D. degrees than any other with Ph.D. degrees second.

Much has been heard lately about young college presidents. Mr. Rainey's findings show that 73 per cent of the presidents now in office are between the ages of forty-six and sixty-five, and 18 per cent are beyond sixty-five. Only three in a list of 192 are under forty. The median age is 56.6 years. A study of the ages at which these presidents entered office shows the median to be forty-three years. Thirty per cent were forty or under, 46 per cent between forty-one and fifty. Only 2 per cent were sixty or over.

"Is there a typical college president?" asks the author in his summary. "The data in this study tend to give an affirmative answer. That answer would be: He was either a teacher or a minister (sometimes both) before becoming president. He had had thirteen or fourteen years experience and was forty-three years of age when he became president. In almost half the cases he was a member of Phi Beta Kappa. He is fifty-six years of age."

During the past year thirty-five college and university presidents were elected and six others were inaugurated. Mr. Archie N. Palmer in *School and Society* for December 21 summarizes a few standard qualifications of this surprisingly large group of newly appointed executive officers.

Each one of these educators has had previous educational experience. Thirty-two of them have held administrative positions in colleges and universities; while thirty-one have held professorial rank. The most common subjects taught by them are education, religious education, and social sciences. Others have taught English, chemistry and physics, biological science, mathematics, and modern languages. Two had taught law courses, one electrical engineering, and one civil engineering.

One man enters upon his fourth college presidency, another, the third, and three, their second. Commenting on this phase of his analysis Mr. Palmer says, "it is significant and reassuring to know the large number of these new presidents who have previously had either practical collegiate administrative or professorial training which might be considered positive preparation for the duties and functions of their new offices."

In age the thirty-five new college presidents range from thirty to sixty-five—the average age is forty-eight. With one exception these men all hold the baccalaureate degree. Only fifteen of them have attained the doctorate, and fourteen others the Master's degree. Eighteen are members of Phi Beta Kappa.

Eleven institutions invited their own alumni to return as chief executive officers. Two of the new presidents had been members of the Board of Trustees, and eleven held instructional or administrative posts in the institutions of which they are now presidents.

Junior Colleges

Has the junior-college movement reached its peak? There are now 395 junior colleges in the United States, enrolling fifty-one thousand students and with buildings, land, and equipment valued at $91,000,000, according to Carl Holliday in *School and Society*. All but five states have junior colleges, but Texas and California predominate. Most of them are financed by cities and towns or by churches.

What has caused this great development? (1) The pressure of numbers in the larger universities, causing them to encourage the building of local two-year colleges to keep the younger students at home. (2) Growing tendency to found municipal universities; junior colleges may be first step in that direction. (3) Many parents believe that boys and girls of seventeen to nineteen are better off at home than on some distant campus. (4) "Overweening desire of every town to boast possession of a college." (5) Lurking desire of many a high-school principal to be known as a college president, and the more or less latent desire of many a high-school teacher to be known as a 'college professor.' "

The largest of the junior colleges apparently is Crane at Chicago, which has 3,014 students, but 183 have less than one hundred each, and several

were found to have only seven to ten. In some cases the college occupies one end of the high school, and in many instances the term "glorified high school" can properly be used.

Salaries

The section of the report to the Committee of One Hundred on Research of the American Association for the Advancement of Science entitled, "Are Equitable Salaries Paid to Professors?" will find many sympathetic readers. The interpretations of William Albert Noyes will be better quoted than summarized:

The average of the index numbers for wholesale prices for the years 1898-02 was 77.7. The similar average for 1923-27 was 152. In other words, a gold dollar was worth just about one-half as much in purchasing power in 1925 as it was worth in 1900. Making allowance for this change in the value of the dollar, the increase in real value of our production was about 50 per cent per capita instead of 200 per cent.

Salaries and wages are paid, however, in the depreciated money indicated by the index numbers and it would seem to be fair conclusion that if professors in our colleges and universities are to maintain the same economic status relative to other classes of citizens, which they held in 1900, their salaries must be increased three-fold. A professor of a given rank who received a salary of $2,000 in 1900 should receive $6,000 in 1925. There are doubtless some factors which make this conclusion not wholly accurate but we may take it as approximately true until someone is able to furnish a statistical analysis which will prove its fallacy.

In order to determine how closely this equitable basis for salaries has been approached, the presidents of nine universities were asked to furnish a statement of the average salaries paid to executive officers who do no teaching and to professors, associate professors and assistant professors in 1900 and in 1925. The presidents of Harvard, Ohio State, Michigan, Illinois, Wisconsin, and California furnished the data required. The other two universities were unable to do this. The average salaries for the seven universities are as follows:

	Average Salaries 1900	1925	Increases
Executives	$3,115	$6,904	122 per cent
Professors	2,791	5,318	87 per cent
Associate Professors	1,956	3,895	99 per cent
Assistant Professors	1,605	3,004	87 per cent

Maximum and minimum average salaries and increases are:

	Maximum 1900	Minimum 1900	Maximum 1925	Minimum 1925	Per Cent Increase Max.	Min.
Executives	$5,598	$2,050	$8,470	$5,562	208	0
Professors	4,002	1,958	7,008	4,550	161	44
Assoc. Prof.	3,950	1,350	5,077	3,665	130	28
Asst. Prof.	2,351	1,412	4,000	2,642	199	44

The examination of these statistics makes it clear that the economic position of professors in these universities is not nearly so good in relation to other members of the community as it was in 1900. While the income of citizens, on the average, has increased about 200 per cent, that of these professors has increased less than 100 per cent, in gold values. When we take account of the index numbers, the value of the salaries paid in 1925 was somewhat less than the value of the salaries paid to men of the same rank in 1900.

Men of Science

The first issue of the magazine, *Journal of Social Psychology*, appeared in February. This magazine under the direction of two able editors, John Dewey and Carl Murchison, will appear quarterly. The first issue contains eight articles. One of these, "The Development of Men of Science," will

interest the reader whether a psychologist or not, for everyone has an opinion on the nature-nurture controversy.

From the 1927 edition of *American Men of Science* Mr. Poffenberger chose the 1,195 members whose names are starred and who are engaged in the study of ten sciences and a sampling of 1,101 members from the non-starred group. He compares several items of information regarding these two groups of scientists: birthplace and its population, undergraduate college, graduate school, shifts in occupation, age at which the degree was conferred, and age at which the scientist's name appeared in the list of scientists just mentioned.

The author confesses to a temptation to see in the predominance of one section of the country—North Atlantic and North Central—or of a few educational institutions some indication of fundamental factors. He continues: "The most significant discovery is that regarding age differences. The starred group seems to reach certain landmarks on the road of achievement earlier than the non-starred group. . . . Such precocity carries the implication of native rather than acquired factors."

THE REPORTER

From January 14 to 16 the Association of American Colleges held its sixteenth annual meeting at the Willard Hotel, Washington. This Association was founded in 1915 and is composed of more than four hundred undergraduate colleges. Its purpose is the promotion of higher education in all its forms in the member colleges and the prosecution of such plans as may make these institutions more efficient. These ends are accomplished through the annual conferences of the association; the publication of a quarterly bulletin, containing significant contributions on problems of higher education; the work of various commissions making studies in such fields as college architecture and instruction in fine arts; the enlistment and training of college teachers; faculty and student scholarship; organization of the college curriculum; and the maintenance of a research and information service at the main office.

During the recent session the association endorsed the Carnegie Report on College Athletics. A survey of the colleges of liberal arts and sciences was proposed to determine their methods of encouraging intellectual life. The proposal suggested that a commission of three leading educators be appointed with an appropriation of approximately $50,000 to finance the commission's visitation of some four hundred undergraduate colleges. It was also recommended that a billion-dollar endowment fund for the small colleges of the United States be raised under the auspices of the Association. The suggestion was made by A. N. Ward, president of Western Maryland College. The proposal was referred to the executive committee. Twenty colleges were admitted to membership. To be eligible, institutions must require 15 units for admission and 120 semester hours for graduation.

A study of the smaller college, its needs, its problems, and its place in the scheme of American higher education was proposed. A report was presented on the studies by the Association in the field of enlistment and training of college teachers and the resultant stimulating of interest in the whole subject of improvement of college teaching.

Bennington College, a new women's college to open its doors at Bennington, Vermont, next September, is completing plans to incorporate into its curriculum recently developed experimental practices in higher education. Following the Meiklejohn plan at Wisconsin, the first two years will be devoted to introductory courses, one year each to the culture of a historical epoch. The last two years will be conducted after the Harvard concentration plan, with a remission of routine duties and emphasis on individual conferences in some of the four fields of science, literature, social studies, or fine arts.

The students are to be grouped in small "houses," and extra-curricular

activities are to be supervised and directed around these residence units. Admissions are to be selective, with limited enrollment, and tuition charges will be $850 to $900 to cover the cost of instruction. In order that students will not all be recruited from wealthy or moderately prosperous homes, a large number of scholarships are being made available.

DURING the fiscal year ending September 30, 1929, the Carnegie Corporation of New York spent approximately $7,700,000 in grants for professors' pensions, library service, adult education, fine-arts education, research and publications, and other projects concerned directly or indirectly with education.

Of this total $500,000 went to library service, $160,000 to adult education, and $50,000 to the American Historical Association for a study of the place of the social studies in elementary and secondary education by a commission headed by A. C. Krey, associate editor of this Journal.

TWO important changes in the regulations of the American Rhodes scholarships have recently been announced by Frank Aydelotte, president of Swarthmore College and American secretary to the Rhodes trustees. Beginning this year, the United States will be divided into eight districts of six states each, and the thirty-two American scholarships assigned annually will be divided equally among these eight districts, making a quota of four scholarships for each.

There will be an annual competition in each state, and each committee will nominate two candidates to appear before the district committee. The district committee will then select from the twelve candidates nominated the four men to represent their district. The plan is being adopted because it is felt that this greater flexibility will allow the scholarships to be distributed in accordance with the strength of the candidates, and also because it will be possible to include the candidates of every state every year rather than two years out of three as in the past.

The second change in the regulations gives Rhodes scholars a wider choice as to the way in which they may use their third year. Rhodes scholars will be appointed for two years, and those who wish to take a third year will be expected to present a definite plan of study for the final year. It will be possible under this plan for scholars to take their third year immediately or to return to Oxford for it after a period of some years of work in their own country. They may also, if they choose, spend their third year in postgraduate work in any university of Great Britain or on the continent of Europe, provided they comply with conditions approved by the Rhodes trustees.

RECENTLY Mr. Frank, president of the University of Wisconsin, announced before the Legislative Education Committee plans to discontinue the experimental college in the next few years and extend the results gained from its existence to the whole university.

The experimental college is in its third year, and offers the first four semesters of university work. Classes are, for the most part, optional, the

first year being spent on a study of fifth century Athenian civilization, and the sophomore year on the United States.

LAWRENCE COLLEGE, Appleton, Wisconsin, on the first of February plans to establish a graduate school of pulp and paper chemistry, to be known as the Institute of Paper Chemistry. Appleton is located in the midst of a large number of paper and pulp manufacturing plants, and the institute will draw upon the experts now employed in these plants in its graduate work. Tuition will be $200 a year. Otto Kress has been appointed director.

SUPPLEMENTING its Bulletin Number 23 on the athletic situation, the Carnegie Foundation for the Advancement of Teaching has just published Bulletin Number 24, a bibliography of literature concerned with all phases of athletics. The significant articles and books that have been written on the subject of school and college athletics in the United States are included in the 1,025 titles. W. Carson Ryan has summarized from his bibliography the following tendencies indicated by his reading:

1. There is general acceptance of athletics as education. Once opposed, then tolerated, athletics have come to be regarded as an important part of the educational process at practically all levels, but especially for youth.
2. Existing opposition to athletics is directed for the most part not at athletics per se, but at what are regarded as evils resulting from an exaggerated and commercialized athletics system, especially in intercollegiate football.
3. Managed at first by undergraduates, athletics are found under various types of control—alumni, faculty, student, and combinations of these; it is now recognized that more and more the educational institution —school or college—must exert itself to administer athletics educationally, with adequate student responsibility but freedom from outside non-educational control.
4. The claim that athletics seriously interfere with scholarship apparently remains unproved although there is some recent evidence that athletes do not reach fully the levels of intellectual attainment their inherent ability would make possible.
5. As to health, college athletes are found to have better life-expectancy than the general population, but no better than the college population, which is itself a selected group, and not so good as that of college men of high scholarship rank.
6. "More athletics rather than less athletics" is generally accepted as one of the remedies for athletics ills—that is, an opportunity for all youth to participate in athletics through intramural and similar activities provided as a regular part of the educational program.
7. Coaches and athletic directors are regarded as highly important teachers of youth, whose personal and professional qualifications must be of the best, and who must understand how to teach, not dominate.
8. School athletics are held to be even more specifically educational than athletics at the college level, and school authorities, public and private, are working on programs of play activities for all, that will include games and sports suited to the physical, social, and emotional needs of children at various ages and stages of development.
9. Considerable difference of opinion prevails as to the desirability of inter-institutional athletic contests for girls and women, with a strong trend at present against such contests, notwithstanding the insistence of a small group that girls and women are as capable of athletic competition as boys and men and need it more.
10. The ideal of sportsmanship is held aloft as one of the genuine values of school and college athletics, of even world-wide significance; at the same time there is controversy over the traditional distinction between professionalism and amateurism.

THE tenth annual Ohio State Educational Conference will be held at the Ohio State University, April 3 to 5.

More than thirty well-known educators from various parts of the United States will address the conference. Among these will be F. P. Keppel, of the Carnegie Foundation; Robert M. Hutchins, of the University of Chicago; Elton Mayo, of Harvard; Mark May, of Yale; F. G. Bonser, of Columbia; Scott Berry, of the University of Michigan; H. H. Barrows, of the University of Chicago; Arthur J. Klein, chief of the Division of Higher Education of the Bureau of Education, who on July first joins the faculty of Ohio State University; Harold O. Rugg, of Columbia University; Arthur Compton, of the University of Chicago; E. P. Cubberley, of Stanford University; and Ray Lyman Wilbur, secretary of the Interior and president of Stanford University.

At its January meeting the Board of Trustees of Rutgers University established an office of educational research charged with the function of studying the needs of New Jersey as to higher education. It will be the special function of this department, which will be under the direction of Carl R. Woodward, assistant to the President, to prepare information on specific subjects which may be used by the trustees and administrative officers in determining future lines of development at the University, and to keep on file information concerning educational studies conducted in all departments.

James Rowland Angell, of Yale University, has announced that through the largess of Edward Stephen Harkness, a new housing quadrangle system is planned for the university. It is rumored that Mr. Harkness has given Yale $20,000,000 for this project to balance his similar gift last year to Harvard.

The new halls to be built in the quadrangle system will serve to meet the housing needs of undergraduates. Each quadrangle, with attractive lounges and dining halls, will house from two hundred to two hundred fifty students. President Angell, in announcing the gift, characterized the plan as "of epoch-making significance in the future life of the undergraduate, strengthening and enriching the whole range of his educational opportunities—intellectual, physical, and social."

The University of Michigan has recently announced a six-year combination law course leading to degrees in both engineering and law. The first three years will be devoted to technical studies, and the last three to law. At the end of the fourth year a degree, Bachelor of Science in Engineering, will be given, to be followed by the degree of Bachelor of Laws at the completion of the six-year course. It is felt that this new type of course will help meet the growing demand for lawyers with engineering training in patent law, corporation law, public utilities, and in technical and business organizations.

The 1930 meeting of the North Central Association of Colleges and Secondary Schools will be held at the Hotel Stevens, Chicago, March 18 to 21. The tentative program recently announced will include reports on:

The Success of High-School Graduates in College

A Comprehensive Statistical Report on the Secondary Schools

College-Entrance Requirements in English
Science Teaching in North Central Schools
Experimental Work in Secondary Education
The Status of Athletics in Colleges and Secondary Schools
The Minimum Library Standards for High Schools

In his annual report to the overseers of Harvard University, President A. Lawrence Lowell again suggested consideration of the one-game football schedule for Harvard. He wrote:

Recreation and competitive sports are excellent, nay indispensable, in the training of youth; and intercollegiate contests are valuable, if not essential, in keeping up the general interest in sports of this kind, but they may be overdone. . . . The Greeks thought one great contest of a kind in a year enough to sustain ardor in athletics. May it not be that a single intercollegiate meet in each sport would do the same?

Dean Herbert E. Hawkes, of Columbia College, has recently announced a change in the modern-language requirements for the bachelor's degree at Columbia. Under the new plan the undergraduate may fulfill the language requirements for a bachelor's degree in one of the following ways: by offering one year of college Latin or Greek combined with the equivalent of two years of college French or German; by offering two years of college French or German with the same amount of any other language. Formerly three years of either French, German, or Spanish were required.

"In the revised curriculum," Dean Hawkes announced, "French and German are placed in a class by themselves as far as modern languages are concerned. Spanish and Italian are now placed on equal terms. The richer literature and greater cultural and economic value of the former languages justify our rating."

The purpose of Columbia College, especially in modern languages, will be to give the student a sufficient knowledge of the fundamentals of several languages to enable him to follow his own scholarly inclinations and to satisfy his personal needs without difficulty.

The trustees of Mills College, Oakland, California, have recently committed themselves to raise four million dollars, two millions for buildings and a like sum for the endowment of instructors' salaries and students' scholarships and fellowships. In the proposed building program are included an administration building, an academic building providing classrooms and department offices, a library, a science building, the completion of the present art building, an infirmary, and a new residence hall.

The University of Michigan has adopted a plan of deferred fraternity pledging and initiation to go into effect September 1, 1931. After that date no Freshman will be eligible to be pledged to a fraternity or to board in a fraternity house until his second semester in residence at the university, and then only in the event that he shall have earned during the previous semester a minimum of eleven hours credit and 15 honor points. Furthermore no student will be eligible for initiation until the beginning of his sophomore year, and then only in the event that he shall have earned a minimum of twenty-six hours of credit

with an average grade of C, and shall not have been on the warned or probation lists.

The plan is meeting bitter opposition on the part of the fifty-seven fraternities at the University of Michigan. The opposition is being led by the *Michigan Daily*, the campus undergraduate newspaper, which takes the position that without the ordinary income from Freshmen, fraternities will not be able to meet running expenses, not to mention payments on mortgages, furnishings, and other installment obligations.

THE University of Oregon has recently organized a personnel bureau designed primarily to assist students in their selection of courses and to advise them on their many problems. Special attention is paid to students who are rated in the highest ten per cent and the lowest ten per cent of the enrollment. Included in the program is a freshman orientation week, an honors system, and work with the students who are self-supporting.

ON February 22, Yale University, for the seventeenth time, will entertain its alumni on what is called the Annual Alumni University Day. In contrast to an athletic reunion, Alumni University Day has been established to acquaint the graduates of Yale University with the intellectual progress of the university. At this year's meeting, President Angell will discuss developments of the last year and particularly emphasize the new quadrangle system made possible by the gift of Edward S. Harkness. During the morning, graduates will visit classrooms and laboratories of the university where many will have an opportunity to sit in classes taught by the same instructors under whom they studied while students.

TUITION for all graduate and professional schools at the University of Chicago will be increased, beginning with the summer quarter. Tuition in the Graduate Schools of Arts, Literature, and Science will be increased from $70 to $100 per quarter; tuition in the Law and Medical Schools will be increased from $100 to $125 per quarter; but tuition for undergraduates remains $100 per quarter. It is announced that the purpose of these increases is to provide for the improvement of instruction and of research facilities in the schools affected.

THE American Association of University Professors, in response to a national demand, last year instituted an appointment service for members of the Association. Beginning its second year, the Association is calling the attention of its members to the comprehensiveness of the service and the fact that it is a non-profit making organization seeking to serve university people who want to be in touch with opportunities in their fields.

A PLAN for the reorganization of the undergraduate division of Clark University has been proposed by the president, Wallace W. Atwood. He would continue the present general cultural course for the first two years and during the junior and senior years would have the students specialize for a profession. He would further departmentalize Clark University with a separate dean for each department,

thus hoping to give the student a definite objective in his collegiate career as opposed to the cultural, but otherwise aimless, liberal-arts course. In brief, he would abandon the traditional liberal-arts course and prepare the students for law, medicine, science, or the academic professions. Mr. Atwood expects to place his plan first before the University Senate and then before the faculty.

DES MOINES UNIVERSITY, Baptist denominational college, has been ordered sold to satisfy a $225,000 mortgage held by a bank of St. Louis. Claims of twenty-nine intervenors will be satisfied out of property not covered by the mortgage. Certain endowment funds owned by the school were exempted from seizure but will be taken in charge by the receiver along with other unencumbered property and accounts. Last year a controversy on a religious problem, it will be recalled, upset the stability of this institution.

MARSHALL S. BROWN, dean of the faculties of New York University, in his annual report on the College of Dentistry of that institution recently observed that New York City is fast becoming the center for dental education in the United States. He also remarked that

> the dental profession—or perhaps more properly those interested in dental education—have been discussing for several years the question whether dentistry should continue as a separate profession or as a specialized branch of the profession of medicine. There can be no question that the majority of men in the profession prefer to see dentistry remain an independent profession and that the majority of the dental schools of the country hold a like opinion.

THE faculty committee of the Western Conference has recently removed the University of Iowa from the suspension list. The committee did not, however, remove from the suspension list the eleven Iowa athletes who were named as receiving benefits from an alleged illegal trust fund. Iowa teams in the near future will participate again in Western Conference athletics. The *Daily Iowan*, commented: "Iowa City received the tidings without enthusiasm and with a touch of skepticism."

AN endowment of $15,000,000 has recently been raised for the six American colleges in the Near East. One of these colleges is located in Greece, one in Bulgaria, one in Syria, and three in Turkey. The raisers of the fund stressed in their campaign not only the value of the colleges' Christian education but also the importance of developing understanding of America in these countries.

OF interest to higher education are the recently compiled data concerning the most heavily endowed educational institutions in the United States. Following are the big ten among the endowed universities:

Harvard	$82,820,000
Columbia	69,550,071
Yale	58,024,059
Chicago	43,409,467
Massachusetts Institute of Technology	29,750,000
Leland Stanford, Jr.	28,917,532
Johns Hopkins	24,923,795
Rochester	24,500,000
Cornell	21,230,391
Duke	20,483,610

EDITORIAL COMMENTS

A DEVELOPMENT of outstanding importance in higher education in the past ten years has been the growing emphasis upon individualized instruction. Discontented with the limitations of the lecture-recitation system of college teaching, many educators have urged the promotion of teaching methods which would stress individual rather than group performance. Among the innovations that have followed from this spreading point of view have been honors courses at Swarthmore, Smith, and elsewhere, the co-operative plans at Cincinnati and Antioch, the tutorial plan at Harvard, and numerous other less elaborate programs. Among these latter is the technique developed by Professor Whetzel of Cornell for teaching plant pathology, a description of which from Professor Whetzel's pen we are publishing in this issue.

It is especially to be hoped that this Cornell experiment may lead to similar ventures at Cornell and elsewhere. The immediate need in higher education is more experimentation. The old methods need re-evaluation. New methods need to be devised and stacked up against older methods. And both the old and the new need to be weighed by the best-known experimental and statistical devices.

The importance of carefully controlled experiments cannot be too urgently stressed. Professor Whetzel's description of his method is vital and dramatic, and the testimony of his students is so vigorously enthusiastic that there can be no question that his plan is an improvement of considerable importance over the orthodox method of teaching botany. Yet in the long run measurement will determine whether the new shall succeed the old or whether the old shall live on. Professor Whetzel's enthusiasm needs now to be taken over by many investigators who not only share his conviction that students should be taught as individuals but who also have an urge to accumulate an array of evidence to bear out the contention. That these investigators will present themselves one can hardly doubt in reading Dr. Whetzel's vivid review of his work. It is confidentially to be expected, moreover, that before long experiments built after the Cornell model will produce evidence of large importance in educational theory.

MUCH in the public mind are the findings of the Huddleson study at Minnesota which demonstrated that under some conditions the results of work with large classes are as valuable as those with small classes. Fortunately, however, the issue is by no means finally and completely decided, and the immediate future should see many investigations established to attack the problem from different angles.

It is interesting in this connection to recall Professor Agassiz's method of teaching. Famed for many Harvard generations as one of the greatest

teachers of all times, Agassiz employed an individualistic method not unlike that described by Professor Whetzel. In his *Harvard Memories*, President Eliot relates the following episode as descriptive of the Agassiz technique.

"William Sturgis Bigelow, son of the eminent surgeon, Henry J. Bigelow, went through the Medical School between 1871 and 1874, but at graduation was not sure that he wished to be a doctor or a surgeon. One day he said to his father: 'I want to study some more natural history before I decide to be a practicing physician. I want to go to Professor Agassiz's laboratory and study under him.' His father thought that the son's scheme was foolish, but that he had better try it. So young Bigelow forthwith entered Professor Agassiz's laboratory. On the first day there Agassiz gave him a trilobite and said to him: 'Look carefully at this trilobite, and describe in this notebook everything you can see in that fossil.' He said nothing more, and young Bigelow worked all the morning on those directions. In the afternoon Agassiz appeared again at Bigelow's desk, and remarked: 'That's pretty good so far; but you haven't finished by any means. Go right on.' Young Bigelow put in all the afternoon. The next morning Agassiz came in again and remarked: 'Bigelow, you are getting on. Keep right at it.'

"When Friday evening came, young Bigelow went home to his father's house. In answer to the question: 'What have you been doing in Agassiz's laboratory?' the young man described the process he had been through. 'What,' said Dr. Bigelow, 'No books?'—'None!'—'No instruction?'—'None.'—'Nothing else said?' 'Nothing.'—'Well,' said the father, 'That is exactly the way a puppy has to learn how to live and get his living.' True, but he should have added that what a puppy learns he learns very well, and that the teaching method which Agassiz followed is the only way to teach thoroughly any natural science."

It is easy enough, of course, to quote the masters in defense of any possible position, but in Professor Whetzel's scheme of managing his laboratory we have a modern instance of a hoary pedagogical truth. The deluge of students upon the colleges during the last three decades has brought methods of mass education which often do not challenge students' powers or energize their faculties. The evils of large-scale production seem likely only to be counteracted by more and better methods of individualized instruction.

W. H. C.

REVIEWS

A Philosophic Landmark

THE QUEST FOR CERTAINTY, *by John Dewey*. New York: Minton, Balch and Company, 1929. xi + 313 pp. $4.00.

This volume is based on the Gifford Lectures given by Dr. Dewey at the University of Edinburgh in the spring of 1929. It is an extended presentation of his experimental theory of thinking and knowledge. His point of departure is the proposition—from which the title of the book is derived—that the hazards and vicissitudes of life inevitably impel man to engage in the quest for certainty. This demand for certainty explains man's predilection for a realm from which these disturbing traits are barred. On the level of religion the quest for certainty has led to the traditional doctrine of heaven; on the level of science it has inspired a conception of reality such as is typified by the traditional doctrine of changeless atoms.

Multitudinous forms of this belief that reality in its essence is something fixed and unchangeable are found along the whole weary trail of human development. They all rest on a misunderstanding of the nature and function of thought or concepts in experience. When it is said that water consists of hydrogen and oxygen, all that we are entitled to infer from this is that certain things can be done with water, or that certain things may be expected from it. The chemical formula is just a convenient tool or handy device for the utilization of previous discoveries. Water does not cease to be water merely because we have found out certain things about it. For most of us, however, the tradition of the past, with its dead weight of accumulated habits, is too overpowering. Knowledge is not just an instrument for dealing with present experience, but is rather a mode of access to an antecedent reality which stands in a relation of contrast to the world of everyday experience. We are all familiar with the ghostly skeleton so painstakingly constructed by science and offered to us, without flesh or blood or sensuous covering, as the "real" world. This mode of procedure explains why we emerge with a world in which man is the helpless creature of circumstance. It explains also why men, ordinarily not deficient in a sense of humor, can gravely maintain that the water which we drink and with which we wash our faces is "really" not water at all, but something that does not have the slightest resemblance to the properties of water.

This is the kind of result that may be expected when we regard knowledge as a "constitutive" and not as an "instrumental" thing. The assumption that knowledge gives us a reality that is set over against the world of sense-perception has been an obstacle to science, to social development, and to religion. Newton's justification for the doctrine of atoms was that the doctrine was necessary in order that "nature may be lasting." The universe would dissolve into chaos without them and certainty would be impossible. As Dr. Dewey comments: Metaphysical fears rather than any experimental evidence determined the nature of the fundamental assumptions of Newton regarding atoms (p. 118).

This new approach, as the author indicates, may rightly be called a "Copernican revolution." It provides a basis for a new logic, for a new theory of values, and for a new interpretation of the relation between science and religion. It discourages attempts to find remedies for human ills by short cuts, but at the same time it gives new encouragement to the faith that the exercise of intelligence can remove mountains and

that the basis of certainty must be sought in man's power to control his environment.

In a word, the book is a challenge to all our traditional ways of thinking. Students of Dewey will find the fundamental idea more or less familiar, but it is presented here in detail and with such a variety of application that the volume may be regarded as a landmark in philosophic thinking. It is a notable book by a noted thinker and perhaps—who knows—is the foreshadowing of a transformation in our whole intellectual and spiritual outlook.

BOYD H. BODE
Ohio State University

Culture Versus Education

THE MEANING OF CULTURE, *by John Cowper Powys.* New York: W. W. Norton Company, 1929. ix + 275 pp. $3.00.

"The whole purpose and end of culture is a thrilling happiness"; "culture and self-control are synonymous terms"; "to be a cultured person is to be a person with some kind of original philosophy"—these are passing flashes from the vivid presentation here made from a pre-eminently individualistic point of view. The chief thing that the cultured person must not be is cruel. He may be—indeed he is here recommended to be—ironically hypocritical. He may enjoy all manner of comical and contemptuous characterizations of his contemporaries, but this must be done in the privacy of his own consciousness. To the subjects of his contempt he must appear an appreciative onlooker. All that he really owes to his fellows is money and consideration. He gives them money, he listens to their chatter, and passes on, happy in his own isolation.

You are not to imagine that Mr. Powys plays the superior person. Pedantry and priggishness are his pet aversions. His width of view is so marked, his sincerity is so obvious that his readers, while being irritated all along the line, cannot but be attracted, and up to a certain point convinced. The most sacred things are treated in a bright—not flippant—way, yet under the writer's spell, the readers make no protest. No doubt Mr. Powys makes a rather heavy demand on the readers' paid-up capital in the way of reading. Not all of them will have the necessary acquaintance with the Russian novelists—Dostoievsky, in particular—and the latest high-class fiction to meet the needs of this treatise. But the author is generous enough to allow each of his readers to make up a five-foot book shelf of his own. For the essence of culture is to be oneself, to have an isolated personality that is true to itself, and despises without showing it—that would be cruel—all the rest of humanity. Mr. Powys sets the cultured man over against the merely educated man whom he places on a much lower plane. Culture annihilates time and space and enables its possessor to make a private universe of his own, within which he lives and applies the Horatian *odi profanum vulgus* to the cultures of all contemporaries. But he allows them to do the same by him. Who shall decide between this factitious cultural isolation and that compulsory publicity under which John Dewey is telling us that we must all live today?

SIR JOHN ADAMS

Troubles

COUNSELING THE COLLEGE STUDENT, *by Helen D. Bragdon.* Cambridge, Massachusetts: Harvard University Press, 1929. xi + 162 pp. $2.50.

Although Miss Bragdon has limited her collection of data to colleges for women, the results of her studies are useful generally. In eight well-ordered chapters she has brought together a considerable amount of the matters that, fancied or real, trouble the college student. Her report further exemplifies the common belief that information bearing on any single person may find its repository in all places frequented by him. The more usual are listed, but it is obvious from her study that no single counselor may ever hope to co-ordinate all essential data

about even one case. Apparently also she has not found that any particular behavior forms are evidences of the numerous "problems" listed.

Doubtless she would agree that all of us have our troubles. The prime question, after experimentally uncovering them, as the author has so skillfully done, is whether they do not have their own solution in several major objectives. A strong desire for one of several larger purposes seemingly might reduce many of these "troubles" to a minor position. Is or is not the college student ready for handling his "problems?" Miss Bragdon indirectly, rather than with full awareness, puts this question to us.

Besides being well written and skillfully arranged, the added emphasis that "things are not always what they seem," the outline on types of interviews and its techniques together with the discussion of substitutes for interviews, and the chapter on co-ordination are of special value.

Regretfully it must be admitted, with the author in full agreement I take it, we are still in the survey stage of counseling. It is still too difficult, too dubious, too dangerous to think measurable good comes from the process. We still look for proof. Nevertheless, Miss Bragdon has done counseling good service.

CLARENCE STONE YOAKUM
Northwestern University

Integrity

EDUCATIONAL ISSUES AND UNITY OF EXPERIENCE, *by Ephriam V. Sayers.* New York: Teachers College, Columbia University, 1929. vii + 113 pp. $1.50. (Teachers College, Columbia University Contributions to Education, No. 357)

Critical study of the fundamental beliefs upon which educational theories and practices are based, is seriously needed. Conflicts in such beliefs are a direct challenge to the investigator, because they are evidence of waste in educational procedure. A conflict of this kind arises when one phase of a unitary process is separated from others by the special emphasis given to it. The true and harmonious relationship of this isolated phase with others is then lost because this relationship can be found only in the process of which they are all components. Freed from regulation by such relationships, the meaning of the isolated phase is liable to perversion. As a result of such perverted meanings, conflicts arise in theory and practice.

Mr. Sayers' book is, therefore, timely and valuable. He has made a large sampling of textbooks and preferred readings representing the general educational theory used in undergraduate courses of schools belonging to the American Association of Teachers Colleges. In these books and articles he found twenty prima facie issues underlying "significant contrasts in educational thought," which he presents with appropriate quotations. Two examples of these issues are: "Shall we give the language arts and arithmetic the dominant position in the elementary school, or subordinate them to social activities?" "Shall we think of subject matter primarily as something to be learned, or as something to be used?"

Mr. Sayers then introduces the concept of "wholeness" from the points of view of philosophy, instrumental logic, biology, physiology, and psychology. In the "integrity of experience," regarded psychologically, he finds the opposing factors of the educational conflicts reconciled as mere aspects of a unitary process which have been more or less separated from this process by undue emphasis upon them. The book concludes with seven basic principles of educational method, such as "all activity is adjustive," "the unit of learning and teaching is the individual adjustive experience," and "individual integration means social integration."

This book, which reveals good scholarship and an intimate acquaintance with educational problems, is valuable especially to advanced students who are familiar with the fundamental concepts of psychology.

J. H. COURSAULT
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Persistence

ACADEMIC PROGRESS, *by Harold A. Edgerton and Herbert A. Toops.* Columbus, Ohio: Ohio State University, 1929. x + 150 pp. $1.50.

In this monograph the authors have prepared an excellent statistical study of a four-year follow-up of the Freshmen entering Ohio State University in 1923. The book is devoted to a detailed study of the persistence and elimination of the students in six of the chief colleges of the university. From a statistical standpoint the work has been done with thoroughness and care.

The academic records of a total of 1,958 students were carefully followed through the four years from 1923 to 1928. This method is clearly the only adequate procedure for the study of problems of persistence and elimination, and the painstaking work of the authors has resulted in the most reliable information on these questions yet available anywhere.

As an example of the type of the findings, we cite some of the results from the College of Engineering. Of the 350 Freshmen who entered in 1923, only 27 per cent completed 12 quarters (normal) work in four years, while only 13 per cent were graduated in the four years. The writers conclude that the average student cannot complete the engineering curriculum in four years of three quarters each. Again, we find that the most intelligent 10 per cent of the students accomplish from 1.7 to 2.3 times as much as the least intelligent 10 per cent of the students. These and similar facts are highly significant for the college administrator.

This monograph will be difficult for the administrator to read because of the large mass of statistical detail. Thus, although full of very important data, it is rather tedious reading even for a statistician. The tables and charts are good, but the book would have been improved if these had been scattered through the text instead of bunched at the end of chapters. Regression equations, such as those on page 72, should have been supplemented by the errors of estimate, to assist in a clearer interpretation than that made by the authors. These limitations, however, detract little from a very significant statistical contribution.

KARL J. HOLZINGER
University of Chicago

English

INDIVIDUAL INSTRUCTION IN ENGLISH COMPOSITION, *by Stephen Dewitt Stephens.* Cambridge: Harvard University Press, 1928. xiii + 150 pp. $2.50.

The use of the term "individual instruction" is attended by the dangers of vague understanding. Mr. Stephens has made the pertinent observation that "individual instruction is merely the present manifestation of the development of method." Thus it is related more directly to elements of the learning situation than to the subject-matter itself. A group of learners may, through properly directed interests and activities, master the same content; but the method of individual instruction seeks to free the student as fully as possible "from the rate of progress set by the group." "Successive theories of psychology and the parallel theories of method," says the author "have more and more indicated that the pupil must be met on the level of his needs and taught by the instrument of his own activity."

An interesting review of the various plans designed to further individual instruction in school training is given in the earlier part of the book. These plans include the St. Louis promotion plan, the Elizabeth plan, the Cleveland plan, the Pueblo plan, the Winnetka plan, the Dalton plan, and others. In the next section of the book the author emphasizes the influence of modern psychology on the development of modern method. The technique of individual instruction, he believes, is an inevitable outgrowth of the evolution of the psychology of thought. "As patterns for the pupils' thinking, they [individual instruction lessons] attempt to set the situation and to guide the choice of responses to that situa-

tion toward desirable ends of the educative activity."

The remaining sections are devoted to a discussion of the elements of the learning situation, types of situations as illustrated by sample assignments taken from individual instruction sheets, and visible tendencies revealed by the instructional material examined. The sample assignments quoted are all in the field of English composition. But the focus of interest in the book rests upon the more general topic of the development of individual instruction as an aspect of method in school training, the illustrative references to composition being secondary and incidental.

ROY IVAN JOHNSON
Harris Teachers College

In the Lay Magazines

C. W. HALL

"How Colleges Rob Men of Priceless Years," by M. K. Wisehart, *American Magazine*, February, 1930.

Edward W. Berry, the degreeless dean of Johns Hopkins, educated himself in the field of geology by informal, but doubtless efficient means. His success was recognized at Johns Hopkins by promotion from assistant to instructor, to associate professor, to full professor, and finally to dean. Naturally he has his own ideas of what education is and how it should be attained. According to Dean Berry, "The student's mind can be trained as well—better, I believe—by working on what he is interested in and is going to use later in life than by working on distasteful subjects for which he will later have no use."

The curriculum of today has accumulated debris for the past three or four hundred years. One of the inheritances from the sixteenth century is the idea that it should take four years to complete a college course. At Johns Hopkins, students who are properly prepared and possessed of the potential ability to carry on are admitted to graduate work at the end of the sophomore year.

"Mr. Jefferson's University," by Emily Clark, *American Mercury*, February, 1930.

The fear is expressed that the university founded by Jefferson will succumb to educational modernity. Its freedom of choice of subjects, its failure to take "athletic championships" seriously, and the fewer spectacular students produced all mark the University of Virginia as "less collegiate than any American university." But there is "grave doubt as to whether Mr. Jefferson's happiest form of self-expression, far truer as well as far more lovely than the Declaration of Independence, can remain intact in its essence."

"College Here and Abroad," by John Erskine, *World's Work*, February, 1930.

"Exactly how much should higher education contribute to material success, how much to 'the good life?'" Professor Erskine attempts to answer this question by contrasting American and European education. The two social systems are entirely different. The object of European education is to "supply the members of the different social categories with the culture proper to their class and to keep them in that class." On the other hand, the object of American education is to "enable every citizen to rise above his class."

America is far ahead of Europe in applying scientific discoveries to the practical purposes of life. In America, "every discovery in science or any other field carries with it automatically an obligation to develop it and make it available for society at large." In thus shaping our education toward the goals of practical results

we have lost sight to a large extent of that satisfaction in the mere play of the mind which characterizes the education of the fortunate classes of Europe.

We shall undoubtedly keep our ideal of social advancement for all classes, and that ideal will continue to influence our educational program; if we should, however, add to the ideal of social advance the ideal of human wisdom, we

might turn to good account some of the resources of European education which we now neglect.

"Women's Colleges and Race Extinction," by Henry T. Moore, *Scribner's Magazine*, March, 1930.

The president of Skidmore College answers the article by Henry R. Carey in the *North American* for December, entitled "Sterilizing the Fittest." He admits that there may be considerable truth in Carey's charges, but he suggests that curriculum modifications may be the remedy. The situation at Skidmore College, where fine arts, music, home economics, secretarial science, nursing, and health are offered in conjunction with academic work, seems to be somewhat different from that at the traditional women's colleges. Figures are presented which show that the younger graduates in the fine-arts groups marry 45 per cent more frequently than the A.B. graduates.

Meanwhile we are led, if not to a conclusion, at least to an interesting speculation concerning the function of art in the education of women, its relation to their satisfaction in life and to the propagation of the race. Since the art interest of women leads so naturally to concern about beautiful household arrangement, well-designed dress, and well-bred manners, as well as to good taste in pictures and music, we are led to wonder whether this interest in its broadest sense, the enthusiasm for beauty and order, the feeling for balance and proportion, should not be made the corner-stone of sex differentiation in higher education.

"Go to the Ant, Thou Sluggard," by Edgar W. Knight, *Scribner's Magazine*, February, 1930.

Those who would scorn the summer session of the American university are not acquainted with its fine record of achievements.

Somewhat in contrast to many students who attend the regular semesters, most of these in the summer session seem to know what they are about; and they go about it with intelligence, despatch, and industry. . . . The courses generally correspond strictly in standard to those given during the regular academic terms. . . . The teachers are the best that the institution can recruit from its own staff and from sister universities.

The reports that the summer session is an unorthodox and jerry-built makeshift and suffers from weaknesses that the regular academic periods are not called upon to bear, are the weak inventions of education snobs and sluggards. For like Boston and Chautauqua the summer session has become almost a state of mind. Agassiz, Miller, and Vincent, the founders of this remarkable institution, knew their proverbs.

"Books and the Nation," by M. A. DeWolfe Howe, *Scribner's Magazine*, March, 1930.

This extremely interesting report shows how the Library of Congress is extending its resources and influence and creating a center of learning which is attracting more and more research scholars. Endowments and grants are providing for the establishment of chairs which are to be filled by experts in the interpretation of collections. Five of these chairs have already been provided. In addition, eight consultants in various fields have been appointed. The possibilities for research under the guidance of a corps of experts are promising.

"Oxford Is Rather Better," by H. L. Puxley, *Outlook and Independent*, January 15, 1930.

A graduate of Oxford, who is now at Yale, in a friendly spirit compares the two institutions. He feels that the opportunity for the student to discuss problems of their own selection among themselves which is offered in the English college is of utmost importance. The broader education which the American system offers may be offset by its superficiality. However, the more efficient management of the American university promises greater progress than does the laissez faire attitude of the English institution.